RECORD

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Contents and Table Note Book

No. 52

(April 8th, 1958 - Nov. 29, 1958)

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Collection and Field Note Book

No. 52

(April 24, 1958 - Oct. 19, 1958)

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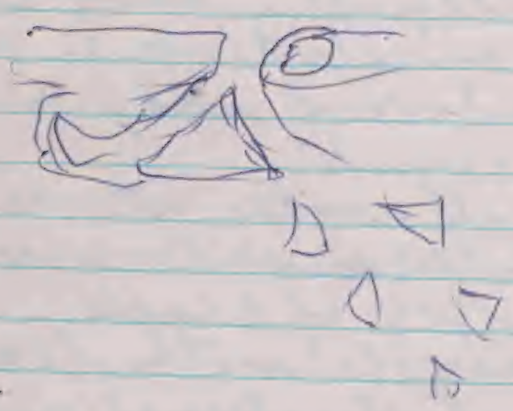
1958 Marshall Jr.

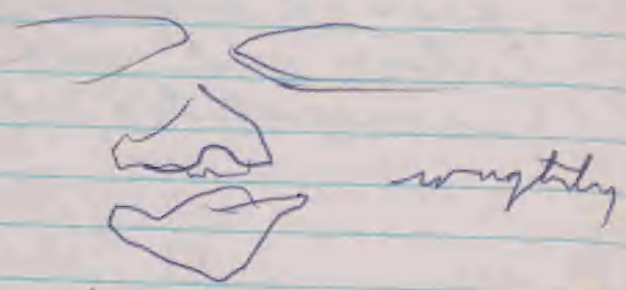
April 24 - Kwajalein I.
Rained last night,
heavy wind + clouds, rough
sea at 8 a m.
Trentepohlia very common
on Tournefortia trees on
windward side, some seen
on coconut.
Small water strider (Halovelia)
collected under coral boulder
near top of beach.
Scaevola with leaves
much thickened and badly
distorted by salt.
Water striders of 2 sorts, one tiny
black one, one large blue one,
around high tide mark under
stones and more commonly in
accumulated tufts of Jania, etc.

1958 Marshall Is.

Apr. 24 Namu Atoll (from air. (photos 8-10 on Roll 1 b+w)
Narrow pass on west side, with an arrangement such as this.



Another, more to south, with two ~~reefs~~ reefs in entrance



roughly

Good native vegetation on 3 or 4 islets, esp. the two on the east reef. Wind grooving very conspicuous on seaward sides. Some coconuts.
Many small bars on reef. all held by beach-rock & fragments of reef rock.

Apr. 24. – Kwajalein Island. Kwajalein Atoll
39420 Trente probable
common on bank of Tourneforti

from air
Apr 24 – Ailinglaplap Atoll.
No signs of typhoon damage.
Two passes on west side with long spits or reefs running inward from them on both sides.
On northwest islet, especially, there are patches of forest, surrounded by coconuts, much of the forest a pale yellow-green.
(Photos of Ailinglaplap from one with curious remnants of platform on lagoon side.)

Dull orange color.
and Coconut.

1958 Marshall Is.

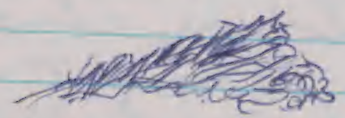
Apr. 24 Jalvit from air
went [illegible] along east side
at 300' alt.
Islets vary much in
extent of damage. All
have some coconut trees
standing, some have many
More trees standing at north end.
Many coconut trees down
on all islets, all of these
a almost all, or s.e. side
fell toward lagoon, all
along seaward side of
these islets a great amount
of fresh light colored coral
debris is deposited
Much root mat of coconuts
left toward calm side.
On southeast side
islets, are narrow,
very little left on them.

Apr. 24 - Jabor Islet -
Some trees standing,
many knocked over
& broken off.
On the large part of the
islet among the buildings
the situation is very
confused, with scouring
and deposition in a
disorderly mess.
Several Calophyllum
trees still standing,
at least one Terminalia
standing but one very
large one uprooted.
Casuarinas mostly
standing. Some Pandanus
standing, many knocked
down, uprooted, or broken
off. All standing trees
except Pandanus are
killed back from the tips
to varied distances; many
a most branches broken
off.
Bird of Zizibristylis cymosa
appalently unharmed
in places, also Cyperus sp.
Phyllanthus amarus
possibly post-typhoon.
Considerable growth of
Cortaloria, fruiting.

1958 (Marshall Is.

On narrow part of island toward Sydney Pier most of the loose material has been removed & apparently deposited on the outer reef flat. The surface of the consolidated platform is irregular but not too much so. The outer edge of this is very discolored by algae and cut into an erosion ramp. The white part was more & less level but if anything sloped a little toward the lagoon. On the lagoon side is discolored unconsolidated material with pinkish & pumpkin silt in interstices.

The reef flat is narrow here, perhaps not more than 100 m. wide. On it has been deposited, by the typhoon, a long boulder & shingle ridge, mostly of large slabs of coral, imbricated upward from the ocean side



up to 2.5 m. above the reef flat, said to have been generally of this height and near the reef margin after the typhoon,

but to have been getting lower and nearer the shore. There seems little doubt that this was entirely constructed by the storm of the material removed from the islet, as there is no loose freshly deposited material elsewhere, yet the consolidated platform has undoubtedly been cleared of loose material. This loose material has had most of the smaller sizes removed and most of what remains is of a single kind of coral (sample 1). That this is not freshly torn from the reef is shown by the fact that the pieces are somewhat wave worn.

(No. 1)

Here, on the lagoon side are the remains of a Pemphis forest. Many of the trees are knocked down, always falling away from the lagoon. Many are also standing or partly tipped. All are dead distally, at least. Many are sending out small leafy twigs from the trunks. These leaves

taste more saline than is usual for this species, as well as being astringent.

Pandanus, on this narrow section, is in very bad condition, mostly dead, whether tipped over, broken off above the roots, or standing.

Tournefortia is rare here, but very heavily sending out new branches from the trunks. Cordia is somewhat beaten down but is very abundantly flowering and fruiting; is very local.

Ipomoea pes-caprae and Wedelia biflora form mats locally, do not seem to have been inconvenienced by the storm. Scaevola is mostly dead but some sticks are sending ~~out~~ out new leafy branches. Occasional patches of Lepturus seen, but rare.

April 24 - Jaluit I. between Sydneytown and Jabor.

39421
3 Cordia subcordata Lam. very local around old construction sites.

Birds seen include several common noddies, one whimbrel, one turnstone, a number of wandering tattlers, possibly one golden plover, and, according to Herold Wiens, 6-8 reef herons. I saw one white one from the air, the rest are probably correctly identified. They were on the large oil tanks at Sydneytown. A large flock of birds, very probably shearwaters, birded offshore most of the afternoon. They flew very strongly and gracefully.

Bits of iron, spikes, etc. are scattered on the old platform surface, seem to be cemented in - need further investigation, as McKee & Gersit think they are included in the rock.

Tops of trees killed by typhoon, lower branches very healthy; flowers vermillion.

1958 Marshall Is.

Apr. 25 Jabor to Mejatto [2 noddies flying]

Small island inside pass - many low trees still standing but badly beaten. a few - 12? coconut trees still standing. A number of Pandanus still standing, some with tufts of leaves.

Next islet - about 19 coconut trees, many Pandanus and other things but mostly defoliated

Next islet - small one. - 4 coconuts.

After this we are too far out for observation, till we reach Jimja Islet, which seems much less affected by the storm than others. Many hundreds of coconut trees standing as well as a green understory of bushes, young coconuts, Pandanus etc. but too far away for good observation.

Tiny islet between this and Imroj has 6 coconut and one other tree standing; some low bush. Beach material piled up around islet is white.

Imroj Islet, south end has many coconut trees standing,

less toward center, at center almost none, then more toward north end. Many have stubs of trees without branches. Some Pandanus with a few tufts of leaves.

One hobby, one fairy tern.

Islet at inner end of passage N. of Imroj has 14 coconut trees standing, considerable low vegetation, and some Scaevola.

Mejatto Islet - South end has quite a lot of coconuts standing

North of this they are very sparse. Many more broken off part way up than with tops. Much rubbish on ground. Very few trees in center part show any signs of life In center some actual gaps in vegetation, as much as 50 m wide

3 noddies flying in lagoon They are rather common on land One gray & white plus red bill.

A piece of pumice size of man's fist embedded in old coconut root mass, surrounded by capsule of roots. (photo) (wash)

In a rather sandy spot place old mats of Lepturus and Thuarea and a few plants of Fimbristylis still in good shape

On south end in wide part of island coconut and breadfruit trees smashed down (photos) but ground vegetation, mostly Lepturus and Thuarea mats, in very good shape. Also some Polypodium, many Pandanus seedlings of all ages.

Large mangrove depression near south end has an enormous amount of vegetable debris, husks, dead trees, etc accumulated in it. The south half is denuded of large trees, or the few left are dead. Thousands of seedlings up to 1 m. are alive here, but not very healthy. (photo) (photo)

The north half is in good shape except that a few old taller trees are dead or broken off. Seedlings of all sizes are abundant in the abundant muck.

On south edge are a few tall Pemphis trees, with smaller branches gone, numerous tiny new branches coming out all over trunk and main branches. (photo)

This whole depression is a section of reef flat enclosed by a high cobble & boulder ridge, about 3 m. high. The bottom is hard, has holes out of which water pours and into which it is sucked, with a period of about 11 seconds causing a fluctuation of water level.

The beach ridge has fairly large Scaevola, Pemphis, Suriana, Guettarda, battered by wind but still leafy and green. Open areas have Alsidium, Fimbristylis.

Area between swamp and lagoon north of ridge has apparently not been swept over by waves + hurricanes, since

LO 1.20

Plants on Megatto

Cocos nucifera
Many nuts germinating
Young plants 1-2 m. tall knocked down

terminalia catappa
Many stumps with sprouts

Pandanus tectorius
Many large trees broken off, uprooted, or with most of branches broken off. Young ones and seedlings in relatively undisturbed ground near south end

Tacca leontopetaloides
a few seen with small green leaves on scoured ground
Many healthy, flowering, on grassy high places and on black soil covered by thin sand.

Morinda citrifolia - on scoured ground seedlings, root sprouts, rare. On south end around mangrove swamp and on lagoon side stubs with clumps of sprouts among some saplings or shrubs.

Barringtonia asiatica
small grove toward south end - trees of all sizes, mostly knocked down, but some standing with branches removed, all sending out sprouts, stumps, stubs, fallen trees, roots, and some seedlings.

Thuarea involuta
one small loose new mat about 3-4 dm. diam
one old mat but most of growth new, 3 dm. across, loose
On south end and along lagoon side large healthy mats on uncovered ground.

Scaevola
many well developed seedlings
On south end and along lagoon side extensive mats on undisturbed and sand-covered black soil.

Tournefortia argentea
very small seedlings locally
On south end seedlings abundant. Some old plants along lagoon beach ridge, sprouting from defoliated shrubs.

Magatta

Canavalia microcarpa
seedling about 12 cm. tall
Guesstt saw large plants at north end
Intsia bijuga
several sprouts from broken but bowed down, saplings near south end.
Polypodium scolopendria
several plants in old coconut base, clump on trunk of fallen breadfruit tree
abundant in undisturbed ground on south end and along lagoon side.
Wedelia biflora
seedlings up to 20 cm. long
common some sprouts from old stems partly buried.
On south end and along lagoon large mats, flowering.

Premna obtusifolia
clump of sprouts from old small stump
rare along lagoon beach ridge near south end, sprouting.

Terminalia samoensis
dense clump of sprouts 3-4 dm high from old pretty large stump

Guettarda speciosa
a few sprouts from old stubs & down saplings, one old trunk 2 dm. thick with abundant sprouts.
common on south end and along lagoon side of beach ridge.
Scaevola sericea
tiny seedlings, cotyledons only, occasional on bare pebbly material in outer beach ridge. larger seedlings in coconut root mats.
large plants on lagoon beach ridge of south end.

Asplenium nidus
One tiny plant in exposed place near base of coconut stump. large clump on side of fallen large breadfruit tree.
Common on ground and on trees around mangrove swamp on south end, also as understudied a terrestrial ground.
Artocarpus altilis
Dead standing trees and dead fallen trees seen.
One fallen sapling with a single green sprout. not far from lagoon.
Guesstt noted no seedling (?).
No large tree sprouting from base. then dead.

Myata.

Fleurya racemosa
Fairly common in undisturbed grassy areas on north end (Gesitt)

Physalis angulata
also in grassy areas on north end (Gesitt)

Elephantopus scaber
also in grassy area on north end (Gesitt)

Vigna marina
Ten-sized mats, flowering, on washed and more rarely on sand-covered soil near south end

Pemphis acidula
In mangrove swamp and in depression near south end, also some along lagoon shore. Sprouting abundantly along trunk and main branches.

Tournefortia procumbens
Seedlings abundant on unscoured soil and on sand.

some old plants on undisturbed or sand covered areas.

Nephrolepis acutifolia
Common epiphyte in mangrove area, but mostly almost dead or just beginning to sprout

Bruguiera conjugata
Abundant in large mangrove swamp, in part healthy, in part larger plants dead or sprouting from base. In smaller swamps only seedlings (in a less alive does not stand burying by gravel.

Calophyllum inophyllum
Large trees along lagoon side and some inland - many stood up very well, others tipped over. Mostly defoliated but sprouting.

Pseuderanthemum carruthersii
x var. atropurpureum
Large plants in center of island, bent over but abundantly flowering
see p 23

Wejate

and beer bottles around
old house site. Soil ok here.
North of this, an area
that may have been
covered but not burned by
debris, has mats of Vigna,
standing Leptunus, Wedelia, Thuarea
and bedding flourishing condition
beaten.
North of this on lagoon
shore some peculiar deep
scoops, very abrupt and
even undercut on land
side, with a new beach on
lagoon side.
As before
here, water has evidently
come over and all down
trees point toward lagoon.
Low place with Pemphis
that is bent down but
still alive.
Premna in beach ridge
beaten but sprouting.
Large Pseuderanthemum
in center in very sparse
area, beaten down toward
lagoon, but still flowering,
abundantly.
Intsia tree, slender, lying
flat but sprouting.
Several of these

On narrower point of
island a sheet of pebble
to cobble size fresh materia
is spread from seaward
to a variable distance inland,
stopping abruptly. From
here lagoonward is generally
a thin layer of sand over
a black soil. The sand is
several cm thick but the
old plants - Fimbristylis,
Polypodium, Leptunus,
Thuarea, Wedelia, Tournefortia,
Vigna, are able to persist
from before storm. Also some
Morinda, small Pandanus,
a breadfruit, small
saplings, small coconuts.
A very few scattered large
coconuts standing. Seedling
of Tournefortia very common.
This is true Atoll soil.
Some higher islands of
this, covered by dense Thuarea
not covered at all by sand.
Taro in these areas flowering.

Mangrove swamp in
center of islet next to lagoon
separated from it by a
beach ridge filled in
with gravel from landward
side with an irregularly
lobed very abrupt margin

Cont'd.

Several fairy terns
2 are white and one gray
reef heron.

nine ~~Species~~
~~Three~~ ~~pairs~~ zones -

1 Area near outer shore
where much material
has been removed, partly
held by coconut root mats

2. Sheet of deposited medium
sized white material
in middle of islet, reaching
lagoon in places.

3 Black soil covered by thin sand

4 Black soil, grassy, inundated
but not washed off

5 Area not inundated, protected
by mangrove swamp.

6 Area scoured clean on
lagoon side.

7 unfilled mangrove
depression.

8 "Delta" ~~in~~ in edges of lagoon

9 Rubble tracts on seaward
reef flat.

Old from p 19

Plumeria rubra
1 no small tree at old
house site in area near
mangrove swamp not
inundated - tipped over,
leafless, but flowering.

Vernonia cinerea
Few mature plants seen
on grassy spot not covered
by sand or scoured.

Fimbristylis cymosa
Rare ~~on~~ absent in scoured
areas, common & abundant on
areas where soil is thinly or
not at all covered by sand or
gravel. Rooted scouring.
~~Also~~ Also around mangrove
swamp and on lagoon beach
ridge on south end

Rubble tracts are opposite
scour channels running
from lagoon toward sea.

Sheet of deposited material
carried lagoonward
and dropped, covering
soil surface.

Several blue-tailed skinks seen
on lagoon side of south end.

1958 Marshall Is

April 25 - Mejatto Islet

39422 Nephrolepis acutifolia
3 common on tree trunks in
mangrove depression

2 23 Pseuderanthemum carruthersii var.
reticulatum growing around former
house sites

2 24 Pseuderanthemum carruthersii
var. atropurpureum (Bull) Fosb
(sing)

2 25 (moss)
on base of coconut trunk

2 26 (moss)
same

2 27 (moss)
same

2 28 (moss)
on tree trunk in mangrove swamp

2 29 (moss)
same

2 30 (mossa hepatics)
same

2 31 (mossa hepatics)
same

2 32 (algae)
same

Jaluit atoll

Rhizome and roots form
large masses, fronds
drooping
abundantly flowering
after being beaten by typhoon.
flower white with crimson
eye leaves green
same - leaves purplish
flowers crimson, dotted
browned by submergence
in salt water during typhoon

1958 Marshall Is.

April 26 - Boat trip to Elizabeth I. from Jabor.

Jaluit I. the density of standing palms very low southward to beyond Ebadreytan and then for a considerable distance there are none. Then about half-way there are a few for a considerable distance, the density gradually increasing till in the last 1/5 there is no appearance, from a distance, of any damage. Acc. Mackenzie there is some damage but not much water came over here - to 200-300 ft at most. This section is the part where the reef lies more or less east and west. The sudden increase in greenness is just where the islet bends.

All islets on southly reef from Jaluit to Elizabeth and westward have same appearance of little damage, viewed from the lagoon. Elizabeth has thinnest appearance except for the second one west of Jaluit I.

Jaluit Atoll (Majuro)

April 26 Elizabeth I.

No water damage on this islet but wind damage severe.

Many trees blown over or snapped off, mostly toward east or somewhat south of east or somewhat northeast.

Ground vegetation scarcely affected except for wilting & browning of leaves.

Breadfruit shows every degree of damage from being completely thrown and killed to some that are not much affected and have 1/4 - 1/3 grown fruit.

Most standing breadfruit trees have most of smaller branches removed and small leafy shoots appearing in all parts.

Those broken off a few feet above ground have the most luxuriant development of leafy sprouts.

Blue tailed and black skink seen.

Small flock of fairy terns - a few common noddies are also.

Plants seen on Thursbell
Pandanus tectorius
Artocarpus altilis
Calophyllum inophyllum
Leptaenus repens
Physalis angulata
Fimbristylis cymosa
Centella asiatica
Carica papaya
Polypodium scolopendria
Cissus sp
Tacca leontopetaloides
Morinda citrifolia
Eragrostis amabilis
Premna obtusifolia
Musa sang
Vigna marina
Eleusine indica
Hymenocallis littoralis
Gomphrena globosa
Mirabilis jalapa
Jagera sp.
Portulaca oleracea
Hernandia sonora
Alocasia macrorhiza
Triumfetta procumbens
Pteris tripartita
Thuarea involuta
Pemphis acidula
Bruguiera conjugata
Cassytha filiformis
Clerodendrum inerme
Digitaria pruriens + microbachne
Plumeria rubra

Citrus aurantifolia
Nerium sp.
Polyscias scutellaria
Hippeastrum puniceum
Xanthosoma sagittata
Peperomia sp
Cucumis sp.
Canna sp
Lancaeria glauca ?
Nephrolepis acutifolia
Nephrolepis hirsutula
Codiaeum variegatum
x Cynodon dactylon
Asplenium nidus
Pseuderanthemum carruthersii (green)
Guettarda speciosa
Alloplectus timorensis
Euphorbia chamissonis
Wedelia biflora
Scaevola sericea
Tournefortia argentea
Cordia subcordata
Terminalia samoensis
Boerhavia tetrandra
Intsia bijuga
Canavalia maritima
Thuarea involuta
Leucas zeylanica
Prosopis grandis
Ipomoea pes-caprae
Pisonia grandis
Pteris pedunculata
Vitex elongata
Peperomia

(Vine on Cordia subcordata)
(Vine on Scaevola sericea)
(Vine on Terminalia samoensis)
(Vine on Intsia bijuga)
(Vine on Prosopis grandis)

Mapituela

All tree species suffered considerable from wind. Some of every species observed, except Calophyllum, were "ironwood" all had branches trimmed off and were defoliated

Small mangrove depression on south side near outer beach - Pemphis, Bruguiera around edges Calophyllum, Intsia Pisonia,

Much debris and dead trees.

Large pond, west end filled with Enteromorpha forming blanket over Mangrove roots Patches of Bruguiera (photos)

South end of island much more luxuriant than other parts, not so much damaged by storm - many breadfruit trees, not much heart, but Pandanus mostly knocked down. Coconuts less damaged than elsewhere (photos)

Pandanus suffered more than any other species - most of the trees on the island being broken off largely 2-3 m above the ground. Most have at least some branches with green leaves.

Around the outer end of the island is an enormous old boulder ridge, very wide, well vegetated. This encloses a small mangrove swamp.

Calophyllum along lagoon beach scarcely affected by storm. On northwest side the leaves are battered, a few trees uprooted

Trees of a number of kinds, including coconuts, breadfruit, Calophyllum if tipped over but with roots on one side still in ground, continue to grow.

A few trees still have good coconuts on them, including one that was blown down.

1958 ff Marshall Is.

April 26 - mejuinek (Elizabeth) I.

3,4433		Portulaca oleracea L. along paths in inhabited area
5	34	Centella asiatica (L.) Urb. in inhabited area common.
2	35	Asplenium [illegible] in open moth end on coral rubble
3	36	Terminalia samoensis Rech. rare on east end
1	37	Intsia bijuga (Colebr.) Ktze. local on east end
4	38	Euphorbia chamissonis Boiss. common on lagoon beach ridge
4	39	Canavalia microcarpa (DC.) Piper common on east end of islet

Euph. chas. - "berai a "perai"
Constipation - drink as infusion
as like hot a cold water

Centella "manuka"
constipation use infusion.

Terminalia "ekuny"
used to cure yaws and diarrhoea
drink infusion made with
hot water.

fleshy, prostrate, forming
a loose mat 4-5 dm. across,
flowers yellow

— forming large dense
— mats, stolons superficial,
fronds erect.

shrub 1 m. tall, stems

sprouts from old stems
— sterile

stems spreading, somewhat
ascending glands
— cauda, thick, yellow.
vein, flowers rose pink.
"manlap" used for medicine,
for headaches and pains.
When a person is too thin
and wants to get fat - squeeze
the plant in water, strain
it, then bathe with water.

Portulaca - "marmilyai"
drink infusion for
many troubles

Intsia "kubuki"
Pongage when young people
want to marry and
after a wedding decoct
worms. they drink water
in which this has been squeezed.

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1	39440	Nephrolepis hirsutula common on coral rocks and rubble	
3			
4	41	Nephrolepis acutifolia common on coconut logs and stumps (also epiphytic)	
4	42	Psoralea pedunculata (Forst. f.) Wedd. common on bases of coconut trees and on coral rubble.	
3	43	Peperomia common on coral rubble usually shaded.	
3	44	Vittaria rare, epiphytic	
2	45	(fungus) on rotting wood	
1	46	Schizophyllum commune common on dead wood	
1	47	(lichen) on coconut log	
1	48	lichen on coconut log	
1	49	(lichen) on coconut log	
2	50	Enteromorpha very abundant in large mangrove depression	forming sheets, floating at high tide.
2	51	(blue green) common in large mangrove depression, as sheets of Enteromorpha	
2	52	(blue green) common as knees of Bruguiera in large mangrove depression	

Jaluit atoll

35

	pendulous
	fronds erect, large masses.
	stems as much as 0.8 m. long, curled at tips; sterile. fleshy.
	fronds pendent

39453		(grunges)	
1		picked up on ground	
1	56	Cocos nucifera	tree 14 m. tall, thrown down by
		on outer beach ridge	typhoon (This mutant form
			also known from one tree on
			Majuro, where the nuts are
			known to be sterile).
		Apr. 27 - Jabor, Jaluit I.	
		in experiment station	
1		grounds devastated by typhoon	
1	55	Ipomoea littoralis Bl.	prostrate, flowers purple,
		very local, near beach	dark in centers.
1	56	Paspalum vaginatum Swartz	sterile
v		abundant around salina pond	
3	57	Peperomia pellucida Sw.	fleshy
		on coral gravel	
3	58	Dentella repens Forst.	prostrate, flowers white;
		common on coral gravel	appeared after banana plant were
			brought from Kusaie and Ponape.
1	59	Digitaria pruriens var microbachne	decumbent & ascending
		local on coral gravel	
		Apr. 27 - Sydneytown,	
		Jaluit I.	
3	60	Ipomoea tuba (Schlecht.) Don	extensive vine, flowers
		common on embankment	white, opening in evening.
		around old tanks.	

1958 Marshall Is.

Apr 27 - Jabor, Jaluit I.
Plants surviving in
old botanical garden and
experiment station

c-a Stachytarpheta jamaicensis
a Blechum pyramidatum
a Euphorbia thymifolia
l Dentella repens
l Cyperus compressus
l-p Lindapsus aureus
o-p Ficus elastica
a Leucaena glauca
c Vernonia cinerea
r Hedyotis biflora
r-p Erythrina ~~sandwicensis~~ variegata
l-a Lepturus repens
a Crotalaria incana
c-a Pyllea microphylla
a Physalis angulata
a Phyllanthus amarus
c Portulaca oleracea
c-a Amaranthus viridis
c Euphorbia hirta
a Eleusine indica
l Morinda citrifolia
l-c Cyperus bryllingia
c-a Cyperus javanicus
c Vigna marina
r-p Ceiba pentandra
c-p Pseudoraphemus cauthieri
c-p and var. atropurpureus
l-p Acalypha amentacea
v. wilkesiana
c-p Artocarpus altilis

c-a Solanum nigrum
~~Rhyticocos~~ [illegible]
c-a Epipremnum pinnatum
l-p Cerbera manghas
l-c Alocasia macrorrhiza
r-p Inocarpus fagiferus
c Eragrostis amabilis
c Cenchrus echinatus
l-c Lygnedrella nodiflora
r Brassaia actinophylla
l-p Casuarina equisetifolia
o Jeffsonia (wild-leaf)
o-p Rhoeo
o-p Terminalia catappa
o-p Ficus elastica
o-p Casuarina equisetifolia
r Hippobroma longiflora
r-p Cycas circinalis
l-c Lepturus pellucidus
r-p Ficus tinctoria
l-p Colocasia esculenta
l-p Xanthosoma sagittata
l Tournefortia argentea
l-c Euphorbia prostrata
✓ Musa
l Premna obtusifolia
l-c Ipomoea pes-caprae
l-c Teleiyga maderalis
r Carica papaya
l-c Scaphigena globosa
o Cirsium sp.
c Hymenocallis littoralis
l-p Cordyline terminalis
c-a Fimbristylis cymosa

la Thuarea involuta
cc Rigiteras pruiens
c Pandanus tectorius
c-a Wedelia biflora
d Pemphis acidula
cc Paspalum vaginatum
Bruguiera conjugata (dead)
Albizzia lebbek (dead)
d Canna sp.
vl Asplenium nidus
d Ipomoea littoralis
d Clerodendrum inerme
vlo. Hibiscus esculentus
Citrus aurantifolia
Citrus maxima (dead)
Citrus sinensis
Citrus tangerina (dead)
d Cassia occidentalis
Cucurbita pepo (dead)
" maxima (dead)
Cucumis sativus (dead)
Citrullus vulgaris (dead)
lo Zephyranthes rosea
vl p Agave sisalana
vl Cyperus rotundus
v p Delonix regia
c p Cocos nucifera

Flock of turnstones around small pond
Several fairy terns
One noddy.

Most of the trees in the experiment station are battered wrecks, but with new shoots coming out of trunks. Pandanus many of them broken off and killed but also many with living branches remaining. Some of the trees, such as Ficus tinctoria, Ceiba, Terminalia, Casuarina are lying down and sprouting

Herbaceous plants are growing luxuriantly, forming a complete ground cover - Crotalaria is the most abundant but Amaranthus, Phyllanthus, Cyperus javanicus, Blechum, Physalis, Elensine, Coronia and all abundant. Leucaena glauca very abundant on some areas.

Crotalaria was spread from small patch over the entire area by MacKenzie, present plants, flowering and fruiting, are subsequent to Typhoon.

Aps 27 Jaluit 9. south of Jabwor to beyond Sydney Is

Shingle ridge on outer reef flat has by most places become lower and more rounded than it was on Aps. 24.

(photo) Some fine material has been moved shorewards

On reef flat between this and shore are scattered boulders, but all are old blackened ones.

(photo) The imbrication of Acropora slabs is all with dip seaward, even down in ridges.

(photo) The main problem is to account for the amount of rounding to be seen. The slab like Acropora is mostly broken with edges of breaks rounded off. The Porolipora is dusty brown but with the tubercles worn off. Some lagoon type Turbinia scattered in with material. Occasional slabs blackened on one side but greater part of material that is above high tide is white

along both seaward and lagoon side the conglomerate platform is being pecked off to a rather smooth, slightly old abraded surface, sloping gently toward sea and very gently toward lagoon. Platform not very broad

(photo) In one place on lagoon side this has evidently been uncovered recently as it is not yet case-hardened

On lagoon side is a wide belt, mostly a consolidated surface, in places covered by thin gravel, that is 1m or so lower than the general islet surface and shelves off into the lagoon. This is all much discolored by algae and may be all covered by high tides. No vegetation on this except algae. On slightly higher ground is Lemphis

This lower surface extends in long lobes or channels into the islet. Low cliffs at head of these channels

(photo)

Turnstones recorded in small groups along seaward reef & a few tattlers.

One white and one blue reef heron. 1 is blue and one white around old tanker perhaps including same as.

On embankment around old tank Tournefortia, Scaevola, Pandanus, Cocos, Wedelia, Vigna in abundance, this tree very badly beaten by storm. Portulaca lutea

One white heron with a few black flecks.

One noddy. One New Zealand cuckoo.

South of [illegible] about 200-250 m. is a channel cut almost through the islet to a depth of about 2 m.-2.5 m curved, obviously artificial. This goes into a compact layer which corresponds to the abraded surface mentioned above. On this are two separate layers of very coarse fragments but very consolidated material, each about 1 m. a little less thick, unconformable.

April 22 - Pingelap Islet

Large semi-open area back of village dominated by Vigna.

Some breadfruit and Pandanus knocked down by wind - toward south or slightly east of south.

Farther west in coconut area many coconut trees down pointing 5°-45° east of south. Some 20° more. Many snapped off ½-¾ way up. Even small trees knocked down.

A few coconut trees lying pointing directly south, these crossed by those pointing east and north of east and south of east.

The grasses and Vigna much more luxuriant here than seen anywhere else on atoll.

Fallen breadfruit sprouting luxuriantly. Majority seem to be down on atoll soil in interior.

Young Pandanus planting not damaged at all. Large Pandanus practically all broken off well above ground, a few tipped over.

Pinlep

Plants seen
Tournefortia
Cocos
Clusia
Leptunus
Catharanthus
Pandanus
Calophyllum
Canna
Artocarpus
Euphorbia hirta
Eragrostis amabilis
Asclepias
Hymenocallis
Fimbristylis
Paspalum conjugatum
Alocasia
Morinda
Tacca
Vigna
Aeschynomene
Polypodium
Phyllanthus
Cathus amantifolius
Hibiscus tiliaceus
Nephrolepis hirsutula
Piptunus
Pisonia
Cucurbita maxima
Wedelia
Pteris
Flemingia
Thuarea
Allophylus

Digitaria
Cyperus javanicus
Solanum nigrum
Eriachne sp.
Acalypha amentacea
Polyscias tricochlenta
Cerbera odollam
Casuarina
Terminalia samoensis
Scaevola
Physalis
Centella
Euphorbia chamissonis
Ipomoea
Euphorbia prostrata
Pseuderanthemum carruthersii
var. atropurpureum
Lygodium
Plumeria
Ipomoea littoralis
Guettarda
Cordia
Pittosporum
Chironchloa
Cyperus odoratus
Rhynchospora
Colubrina
Euphorbia
Ocimum sanctum

Pinkey

A few fairy terns and noddies seen flying. Blue tailed skinks common.
One golden plover
Snake, coconut trees along lagoon beach, down to 10° E of N.
Breadfruit grove has ~~many~~ trees standing but most branches broken off. Trees under 3 dm diam.
Most of coconut trees down in N part of P. pointing east to southeast
Here and enormous number of seedlings of Pisonia on land. Dark thin ~~ya~~ and Rangetans pit near north end - perhaps 2 acres. Supports a good stand of Cyrtosperma fruit plants small, leaves not over 3-5 dm tall, yellow. Parts almost bare, parts taken over completed by Echinochloa and Cyperus.
Another pit north of this is larger, has less Cyrtosperma, much dead Pandanus, a very little Colocasia, and Echinochloa

little Cyperus, fewer small dead Bruguiera

small mangrove swamp, slender Bruguiera about 1½ m. tall, ~~long~~ partly surrounded by dense tangle of Hibiscus tiliaceus about 4-5 m. high. Hibiscus not much affected. Most of Bruguiera killed - not sprouting nor were any seedlings seen. Land 0 to 1 had 1-2 ft. of salt water before typhoon, now none. During typhoon lagoon water came in waist deep, depositing great quantities of coconut husks, husks, leaves, etc in edge.
A few Bruguiera have some leaves near tops.
Brown bird in coconut tree being attacked by 4 noddies.
Several wandering Tattlers, one or two turnstone, 1 plover here. Turnstone in this pit.

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April 28 - Pingelap Islet
in dense open ground beds
off village

39461		Hemigraphis reptans (Forst.) T. And rare	prostrate, gerodlar purplish white, falling very widely prostrate & rooting at nearest footing culms.
62		Pasphalum conjugatum Berg. abundant	
~~Euphorbia~~			
63		Euphorbia ~~thymifolia~~ prostrata Ait. abundant on open ground around dwellings in large taro pits	prostrate, purple.
64		Eleusine indica (L.) abundant	forming large mass, culms ascending, panicle drooping slightly loosely clumped.
65		Cyperus odoratus L. common	tufted
66		Eleocharis geniculata (L.) R.Br. common in mud ~~at the~~ bottom of lagoon	
67		Thalassia hemprichii (Ehrb.) Aschers.	

Jaluit atoll

Palay

Area to west of taro pit recently burned

Present taro pond surrounded by Bruguiera 30' & over with mangroves mostly alive. Larger pond surrounded by soft red mud with white specks.

April 28 – Jaluit Is. Jaluit I. Japan

in Inhabited area, flooded by salt water during typhoon 3½ meters

39468 [algae] in old cistern

1	69	Casuarina equisetifolia L. planted		Tree 12 m tall, badly battered by storm
2	70	Euphorbia thymifolia L. abundant in paths		prostrate, olive green
4	71	~~Tea~~ ~~Canaliensis~~ Nasturtium sarmentosa (Forst.) local in old experiment station	C.E. Sch.	
3	72	Blechum ~~pyramidatum~~ brownei abundant locally		
13	73	Amaranthus viridis L. weed		branched herb to 0.8 m. tall.
3	74	Cyperus compressus L. weed along paths		spreading tufts.
15	75	Solanum nigrum L. common weed in [illegible]		branched herb 1 m. tall, flowers white.
3	76	Stachytarpheta ~~jamaicensis~~ (L.) common weed	Forst.	erect herb 0.7 m. tall, banded, flowers blue violet

1958

✓ 7947		Lycedrella nodiflora (L.) Gaertn. common weed
1/3	78	~~Sta~~ Crotalaria incana Rb. very abundant
✓ 3	78a	Cyperus ~~capitatus~~ rotundus L. common in paths in village Saw: N.Z. Geckos around old Experiment station

erect, up to 0.8 m tall, flowers yellow: no brown lines: bulbs deeply buried, leaves spreading

1958 Marshall Is.

April 29 - Islet in channel N of Jabwoa - from lagoon appears to be sand & gravel with what may be rock at just above low tide level in about 3 places on lagoon side also on north side along channel. All around is a high beach above this.

1 Apr. 29 - Bikon Islet
Cananalis (seedling)
Plant Pemphis
Scaevola
Pisonia
Guettarda
Barringtonia (seedling)
Asplenium
Cocos
Intsia
Pedilan (seedling)
Tournefortia (seedling)
Ipomoea pescaprae (seedling)
Vigna (seedling)
Boerhavia
Polypodium scolopendria
Nephrolepis (seedling)
Vittaria
Nephrolepis acutifolia
Tournefortia
Pandanus (seedling)
Ipomoea, scandens
Flemingia (seedling)
Leptochloa

Beach table shingle, boulder 1½-2 m from sea
5-6 nodules (1-2 white coral)

3 large Pisonia trees knocked down.

Pisonia & coconut, Guettarda knocked down, existing south, also 2 Tournefortia also Pandanus
1 Pisonia in middle
1m

High beach ridge, 2.5-3 m on lagoon side.

11 coconuts standing
6 broken off
6 knocked over.

Beach ridge surrounding rock-bottomed depression seaward side was well vegetated, was pushed about 3-4 m. into depression plants bent down toward depression, pointing N.W. & W. of N.

Depression crossed by a low eroded beachrock a dipping 5° W of N. tipping ½ of on

Low sharp ridge, crescent shape, around S. & E. side

enclosing a crescent shaped depression about 2 m. wide, filled with trash, outside of vegetated ridge.

Scaevola seedlings numerous especially on root masses of Asplenium.

Many root-masses of Asplenium lying around where torn off of trees, but many times as many more in central depression where they are attached, with fronds growing upward in place. This is dominant vegetation in bottom of interior depression.

On side of islet toward pass there is a consolidated bedrock just above low tide level, extending out as a small high bank of newly punched material. The ridge that extends to this is slightly above the general level, has been newly abraded and is white. The part of the general surface that is enclosed and forms the bottom of the depression is gray and shows little evidence of abrasion.

It has a sparse growth of small Pemphis, 1-1.5 m tall, not damaged by storm. Though leveled trees along inner side of depression are tipped over and much debris is piled up on this inner ridge.

Pandanus and Ochrosia fruits abundant but Ochrosia not germinating and Pandanus very rarely.
Cordia and Scaevola seedlings common, also Guettarda, and locally Morinda, Tetrea.

Leptunus a few patches in open places.
Tetrea local in one opening.

Scaevola abundant especially on beach ridges. Guettarda and ~~Pem~~ Cordia somewhat less so. Pisonia everywhere but sparse.

Polypodium common in interior.
Nephrolepis mostly ~~&~~ almost dead but some sprouting.

Island bar two bars
projecting Lagoonward,
the South no at least
more Depressed bars
Blue reef heron

pool in Kampong
plants
Entrance Islet
Pandanus
a Phyllanthus reticulatus
a Polyporus
Musa sapientum
Cyperus javanicus
Stachyarpheta dianicus
Ephegranthes rosea
Euphorbia hirta
a Leptaena repens
a Kalanchoe pinnata
a Wedelia biflora
Pandanus
Amaranthus viridis
Vigna
Hibiscus tiliaceus
Carica
Aloe vera
Bougainvillea spectabilis
(introduced, not wanted)
Pseuderanthemum carruthersii
var. atropurpureum
Fimbristylis
Spathoda
Cocos

Tournefortia
Physalis
Plumeria
Crinum sp.
a Nephrolepis biserrata
Calophyllum
Thuarea
Cleome
Lilea
Lygodium
Eragrostis amabilis
Digitaria pruriens var. insularis
Eleusine indica
Triptogon
Adenostemma
Allophylus
Asplenium
Nephrolepis acutifolia
Ipomoea tuba
Bruguiera
Intsia
Canavalia microcarpa
Tournefortia.
Cassytha

Photos from about #4 on
roll 4 (1-3 are of runway from
lagoon)

Coconuts large Morinda
branched over toward lagoon
Coconut broken off and
lying toward lagoon
all pointing almost
directly south.
One Calophyllum on lagoon
floating away from lagoon

Judging by debris, perhaps
some wash coral in from
lagoon

Many breadfruit seedlings
not far in from lagoon beach

large Breadfruit tree 10cm in from
lagoon has branches broken
off and thrown toward lagoon,
also mode of break indicates
that force was from seaward.

In interior a very thick
growth 1-2 m. deep. of
Wedelia, Vigna

Pandanus mostly not
broken.
In interior trees thrown
mostly to south, some as much
as 30° East of south, most of the wind
One coconut seen pointing with
Beyond about the middle of
the islet practically all fallen

trees point 30-50° s of south and all dead part trees are knocked down. Most Lumnitzera bodes broken. Allophylus, Langeria, down.

From about middle toward lagoon is Avicennia, with Rhizophora, Bruguiera.

Locally just south of swamp are several coconuts and Pandanus down, pointing northwest through most all just the opposite.

Reef, in open base spot on Rhizo and are abundant Xiphasia seedlings.

Swamp — a small depression with beach to sea partly, poor soil water almost fresh, only a few inches deep, smells of H2S. Mud soft right around water, but not deep. Much coral mixed with mud, probably washed in recently.

No mangrove save Lumnitzera abundant however, mostly, forms as dense tangles as usually

Top of table was dead.

ocean. On seaward side and in most open areas very characteristic.

Leeward side of this shows every sign of inundation with deposit of mud & ash.

Leeward of swamp, and separated from it by a mid ridge, is a crescent shaped arrangement of large mangrove depression with many tracks of water, and patches of Bruguiera and Hibiscus. The Bruguiera mostly has the tops dead and especially so in the most seaward part.

On the inside of the crescent is high ground consolidated. On this almost all palms are down, mostly pointing about 90° east of south, but some to N. & the tops are to the west. [illegible] Quite a lot of mangrove depressions separated

der ridge.
Highest parts of platform
inside crescent bare and
apparently phosphatic.
(samples) The black
soil is probably Pismic
ma, but no Pismis left—
Miranda and Allophylus
common Pipturus swelling
abundant. Coconuts and
Pandanus largely knocked
down.
Just inside beach ridge
and outside Mangrove
is a pond with only
a few mangroves, obviously
partly filled in by
fresh rubble removed from
beach ridge. Many
dead uprooted Pandanus
and Rhizophora trees in it.
All fallen trees pointing
directly inland more or
less due south.
East half of this pond
almost filled in with
beach ridge debris and
trees & trash.
Ground on east
toward sea many trees are
lying pointing 20° W of
south. Mangrove
up to beach ridge

rattle decayed
In interlaton on side
toward sea many more mounds.
Open area back of house
covered densely with Neptunia
Leptunus, etc. young
coconuts a year or old.

Water sample from well
99' from beach ridge, 130' from
low water mark.
Appx. 6' deep. Water fresh,
gl. hard & iron taste.
Well cased with oil drum.

Small flock of noddies,
both kinds, & fairy tern.
1 wandering tattler.
Gressitt saw a pigeon.

2 black skinks.
Blue tailed skink common.

1458

aps-29 - Jan'y 1-

Plant
Impatiens
Musa
Zephyranthes rosea
Crinum sp
Artocarpus altilis
Eleusine
Tipuana
Mirabilis.
Cucurbita sp
Wedelia
Setaria
Polypodium
Eragrostis amabilis
Centella
Ipomoea
Cenchrus echinata
Bougainvillea Kalanchoe
Lemna
Cocos
Nephrolepis acutifolia
Nephrolepis biserrata
Cordia
Trumpetta
Pandanus
Cassytha
Tacca
Digitaria
Ischaemum
Ochrosia
Zygettaria
Hemigra

Clerodendrum inerme
Asplenium
Pipturus (seedling)
Bougainvillea.
Brunfelsia asiatica
Vigna
Alocasia
Carica
Portulaca oleracea
Tournefortia
Cucumber maxima
Hedyotis biflora
Pseudanthemum carruthersii
var. atropurpureum
Hernandia
Caloplyllum

Trans

It ~~on~~ northwest end of
village trees have fallen
25° w of south

1 golden plover
Panorama of 6 photos from
w end of I. Photo of lagoon beach
I inland from same place, E end.
Breadfruit seedling
in open grassy area
at w end.
Locally the area leaves
are brown! - salt water?

Phosphate area interior of is, se end
is extremely rough and
piled with boulders, as
though they had been extensively
solutioned and collapse. Inhabited
area. Phosphate must have
been 2-3 ft. thick. Some dark brown
many large white unaltered pieces of coral embedded
2 Many depressions
but with coconut trunks,
pandanus trunks etc.
Still has small red crypt
Much sand in bottom.
photos. Few mangroves left,
all large ones dead,
medium ones (4 in.) dead at
tops, small ones healthy.
Beach ridge shifted
in to edge of depressions,
stopped abruptly, burying

coconut & other trees.

2 Fungi Ochrosia ~~was~~ knocked
down into mangrove
swamp, pointing 60° w of south
Large Barringtonia badly
beaten-up between
mangrove and sea.
Many seedlings under it.

In north end of mangrove
depression bottom is rock.
Evidence of solution, channels
and deep undercutting
Rock stained red-brown.
Water almost as salty as sea

Deposit of white coral
pebbles & cobbles seaward
of depression very flat
topped. Top about 2 m.
above water level at low
water
This deposit continues
eastward, with an
abrupt lobed margin,
varies from about 3 to 60
m. in width, perhaps
1 m. above general level of
island. Material mostly
rounded, small gravel to
cobble size.
More crushed than
standing here. Quite a

Hodgepodge of directions but most 20°-30° of a thru away other way. a few just opposite this. Large Barringtonia tipped over landward.

Large rubble tracts on seaward reef.

Inland in west third of island the general ground cover is a lawn of Thuarea and Leptaena, some Wedelia bradleyana by insects. Water may have come over here but left few traces, little trash.

In center third much water obviously came over. Enormous pile of trash, mud, gravel, etc. Most of coconuts and other trees are down here, mostly pointing from 20° w of south to 30° e of south.

Soil has been largely either covered up or leached away. Fleuya very common. Just west of Talisia also locally so.

In East end has been even more affected rubble beaches deposited

almost to the lagoon shore. Most of trees down

In East End V_c has not had much water across it but some

Many trees are down mostly pointing south or a little west of south, but a few point north. More standing trees here than elsewhere on islet.

In slight recession on lagoon side there is a tiny gravel ridge at top of beach, then a cobble to boulder beach, rather wide, then just exposed at low tide, a wide sand flat, fine sand, rippled surface. (sample 95)

This is about 15-20 cm. deep gradually thinning westward till a few tide level pitted rock platform is exposed. Then a long shoal for about 200-300 m. a 1st platform is exposed below a gravel ridge 1.5 m. high.

Apr. 30 – Legrok I slet.
Brown booby flying over lagoon, very dark phase.
Hundreds of frigate birds, thousands of noddies, predominantly white capped, a very few pairing terns, many boobies, mostly brown in various stages.

cordia. Intsia

Coconuts, large Pisonia, to 1 m. a mile down, pointing approximately south.

Many germinated coconuts at top of beach.

Interior of islet was a Pisonia grove with a few large Intsia. Now the Intsia and many of the Pisonia are down. Pisonia sprouting vigorously. Intsia less so. Pisonia that are standing have most of branches broken off but are sprouting very vigorously.

around periphery especially on northeast and Tournefortia and Terminalia. Terminalia especially common. Many coconut seedlings. Several small patches of Scaevola. On n.w. extension of islet a pure stand of Pemphis, much beaten by typhoon but mostly still alive. Here the substratum is a pitted very dark gray anticlinal platform

4 crested terns.
Were saw a small flock of turnstones.
1 New Zealand curlew.
Pisonia flowering and fruiting vigorously.

Beach sand washed inland, mixed with humus probably normal condition before typhoon, as very little phosphate rock found, only a little immediately around base of large tree.
Red birds with white but no crustacea or insects.
1-2 inches of sand over humus on north side.

plants:
Calophyllum (seedling)
Barringtonia (")
Guettarda ←→
Pisonia
Cordia
Terminalia samoensis
Tournefortia
Asplenium
Ipomoea
Cocos
Pemphis
Scaevola
Canavalia (seedling)
Vigna (")

White-capped noddy nesting in abundance, about 60 nests with egg or downy young visible from one position in a fallen Intsia tree, nests obviously built after tree had fallen. Many also in Tournefortia and Pisonia.

Long curved sand horn on east point of island, curved like sickle toward outer reef, about one mile west point, also curved some way East of island a

long reef about 1½ miles inside main atoll reef, enclosed lagoon open at both ends.

Large shallow area flagged and islet and stretching parts north.

White-capped noddy nest very compact, made up of Pisonia leaves, possibly stuck together with excrement from appearance, but this not investigated. Apparently adult birds sitting by nests, allowed themselves to be handled, possibly young not yet flying.

Sept. 30 - Majuro to I.

Well about 1 km. from sea 3' deep through rubble the entire way.
Coconut roots from land black soil layer all the way to bottom, becoming sparser downward.
None in overlying layers.
Two overlying layers - Top one 9", no grains.
Next layer, with pink grains, 7½"
Last layer black and filled with roots 6"
Under this rubble with decomposed grains 4.3'
This is in the deposition sheet.
Ether reef in bottom of depression, uniformly dark gray 3.6' water well aerated. No H_2S odor.

N end - next small sharp cobble ridge along seaward shore. small depression back of it 3-5 dm deep then rise to top of fresh rubble sheet.
This spreads inward. Little denudation here except near shore, many evidences of strong flow inward.

Portulaca oleracea
Boerhaavia scandens abundant
Sesbania
Guamea — Cocos
Leptenus — Digitaria
Asplenium — Vigna
Pisonia — Cleome
Tacca — Physalis
Fimbristylis — Alysicarpus
Morinda — Urochloa
Polypodium — Calopogonium
Pipturus

Rubble sheet thins out inward and ends perhaps 10 m. in a row in best evidence of flow of sea water continuous inward.
Depression with brackish water
Several tall standing Pisonia inward from middle. Just before there is enormous deposit of trash.

Breadfruit on inner side mostly dead ~~Dead~~ Coconuts ~~Coconuts~~ nearly so.
Inner side may have been covered by salt water but little evidence.
Erosion from lagoon side has cut away soil in places.
Trees mostly pointing toward lagoon but in places confused

1958 Marshall Is.

Apr. 28 (Pingelap).

39479	1 (fungus)	on backof dead breadfruit tree	

Apr. 29 - Kinijorj ?.

4	80	Batis a Brigusa (Colela.) Ktze. edge of forest inside outer beach ridge	small tree
2	Br.	(alga) open sand inside ~~dune~~ lagoon beach ridge	

Ribon

Apr. 29 (Ribon)?.

2	84a	Leucophanes at base of coconut Tree	dense cushion, perhaps cultivated by inundation. 3½ months earlier by salt water.

Lijeron

April 30 - (Lejerok)?.

3	82	Pisonia grandis R.Br. dominant tree in vegetation of islet.	low tree with massive trunk, flowers pale green.
"	83	Pisonia grandis R.Br. leaves.	same

May 1 - Jaluit

Jaluit Atoll

1	84	Vernonia cinerea (L.) Less. var. parviflora (Bl.) DC, very common weed in typhoon flooded area	flowers purple
1	85	Ageratum conyzoides L. very rare just above beach	flower white

'37

~~May~~ 1 – ~~Hydrocyclone~~

Cut across inlet cut into a compact layer extending across inlet but becoming more rubbly seaward. Well consolidated but not case-hardened

Then a rubbly layer, weakly consolidated: can be pulled apart with pick. Top very flat. Judging by algal growth the top corresponds with high tide. Layer is about 2.5' thick & somewhat more. Has interstices partly filled with fine material

Over this is a variable layer of rubble 2–4' thick to 3.9–4" at highest point nearer seaward side. This has little or no fine material. It is weakly consolidated at least near cut. Here it shows some flowstone deposition. May be loose away from cut.

Bardner points out that this middle layer may be like the sheet deposit on Megal To and could be consolidated because between tides.

Width of inlet from inner edge of beach rock is 115'

Levels taken with reference to ~~water~~ inside edge of beach rock

	Top of Bed Rock	Top of Middle Layer
0	0.9	2.5
0	0.5–0.8	2.9
0	0.5	2.8
0	0.9	2.8
0	0.5	2.75
1	0.4	2.8
1	0.4	2.7
0	0.3	2.65

Top layer is weakly cemented

February – saw N.Z. cuckoo again.

Very high tide in afternoon – many depressions filled with water which came up through bottoms. The old Japanese tennis court and one of the garden plots were flooded. Young coconuts, 4 years & bit more, ~~plants~~ in these garden plots flooded by 6 inches of salt water.

Map 2 - Flight pen Jabwiq & Majuro
stop Feb 17th
Small bar exposed at left running in from seaward place.

From Kydna to my south at first no preponderance in direction of fallen coconut tops, then gradually more to west-seaward, but still not all.

At corner of Jabwiq a white rubble sheet covers the east side in & about 4 acres of narrow part & north. Clearing on account of vegetation damage although. Large mangrove swamps not much affected.

Mangroves say more around pond on Elizabeth, more around pond on next islet. Them not much affected by storm.

No damage to small islets to east Pingelap greater than in area between Elizabeth and Jabwiq.

A number of "seaward lagoons" along west side Also small bars or reefs some with, some without beachrock- pink in color as if made by foram sand.

Along west reef, especially northward there seem to be surge channels both on lagoon and seaward sides.

On islets north of Majatto white rubble sheets cover seaward ~~2/3~~ 2/3 - 3/4 of islets. Low vegetation remains on lagoon side.

This pattern to perhaps 5 islets from north end on east reef. Then much less damage.

Kwapaleia Salt
Planta

la Cyperus rotundus
c Ceiba pentandra
c Hymenocallis caribaea
c Heliotropium ovalifolium
c Ipomoea procumbens
c Tournefortia argentea
c Euphorbia thymifolia
c Cocos nucifera
c Cenchrus echinatus
c Dactyloctenium aegyptium
c Phyllanthus amarus
c Cenchrus echinatus
c Stachytarpheta indica
c Euphorbia hirta
c Eragrostis amabilis
cc Portulaca pilosa var. rubra
c Portulaca oleracea
o Vernonia cinerea
c Portulaca samoensis
c Euphorbia prostrata
c Plumbago indica
c Fimbristylis cymosa
Hibiscus hybrid
Thevetia peruviana pongo var.
n Ipomoea triloba
c Paspalum sp.
n Momordica charantia
c Phyllanthus debilis

a Desmodium canum
n Centella asiatica
cc Wedelia trilobata
cc Heliotropium procumbens
cc Euphorbia heterophylla
cc Vigna marina
c Phyllanthus indica
c Eclipta alba
c Sandwithia guyanensis
Desmodium procumbens
n Moringa oleifera
c Calophyllum inophyllum
cc Commelina benghalensis
cc Canthium subcordatum
cc Cleome viscosa
c Sida acuta
c Waltheria indica
o Sesbania sesban var. aculeata
var. aculeata

Digitized by Google

Ficus sp. old terminal
Pennisetum ruby
Hybiscus rosa-sinensis
Spondias pseudosimaroides
Brachychiton acerifolius x populneus
Tabernaemontana corymbosa
Codiaeum variegatum
Hibiscus cf schizopetalus
Alocasia macrorrhiza
Pedilanthus tithymaloides
Nerium sp.
Hydrocharis sp.
Polyscias scutellaria
Ficus pseudocalli littoralis
Philodendron bipinnatifidum
Eucalyptus willsiana
Breynia nivosa
Polyscias trichlorata
Polyscias (crinkled)
Asclepias angustifolia
Cordyline australis
Pentas lanceolata
Fittonia elegans
Rhapis cf humilis
Equisetum sp.
Yucca aloifolia variegata
Chrysodendron (coccineum)
Ficus cf virens
Epipremnum (orange)
Ficus carica
Cordyline terminalis
Calliandra surinamensis
Carica papaya
Passiflora edulis
Chrysobalanus icaco
Euphorbia (fleshy spotted leaf)
Cyrtodeira
Araucaria excelsa
Trychosperma macarthurii?
Licuala grandis
Epipremnum pinnatum?
Euphorbia pulcherrima
Acalypha hispida
Vitex trifolia
Ravenala madagascariensis
Artocarpus altilis
Anthurium (cream)
Asparagus sprengeri
Polyscias guilfoylei
Ficus cf benjamina marginata
Calophyllum inophyllum
Strelitzia reginae
Russelia equisetiformis
Dracaena sp.
Roscoea purpurea
Polyscias scutellaria
Schefflera terebinthifolia
Pandanus sp.
Cordia sebestena
Ipomoea pes-caprae yellow-orange
Cassia alata
Bougainvillea sp.
Clusia rosea
Dalbergia pentaphylla
Cryptostegia grandiflora
Ficus subcordata
Euphorbia
Hibiscus tiliaceus

Clerodendrum sp.
Bougainvillea sp.
Hyptis sp.
Plumbago sp.
Clusia sp.
Terminalia catappa
Cestrum sp.
Quetzalia sp.
Thespesia populnea
Hernandia sp.
Casuarina equisetifolia
Spathodea campanulata
Hibiscus tiliaceus
Scaevola sericea
Leucaena leucocephala
Rhoeo spathacea
Ochrosia oppositifolia
Persea americana
Cocos sp.
Melicoccus bijugus
Araucaria columnaris
Pemphis acidula
Carissa grandiflora
Tephrosia purpurea
Thespesia populnea
Cassytha sp.
Codiaeum sp. var. ?
Dracaena sp.
Asplenium nidus
Begonia sp.
Nephrolepis
Polyscias fruticosa
Schefflera actinophylla
Alternanthera sp.

Peperomia guttata
Crinum asiaticum

1948 Marshalls

Majuro - Kwajalein

May 2 - D. Cap Islet
Majuro Atoll

39482 Dentella repens Forst.
2 abundant around edge of airstrip

prostrate, forming mats, flowers white

May 4 - Kwajalein Islet
Kwajalein atoll

1 37 Grassy ground near airstrip
3 37 Portulaca tiliotes L.
very local one patch seen

prostrate, flowers reddish purple

1 83 Lepidium virginicum Linn.
common

spreading to ascending

3 87 Euphorbia glomeriflora (Millsp.) Wheeler
common locally

erect, arching at apex

1 90 Cyperus polystachyos Rottb.
2 to 3 ft
local

ascending to erect.

1 91 Pluchea indica (L.) Less.
common

erect shrub, branched, 4 dm. tall flowers rose pink.

1 92 Pluchea odorata (L.) Cass.
common

shrub 6 dm. high, flowers pinkish gray

4 93 Plucheq
several plants in small colony with #39491 and 39492

prostrate shrub much branched, flowers purple

1 94 Euphorbia maculata L.
one plant seen

prostrate, olive green with spot in leaves

1 95 Desmodium canum (Gmel.) Schl. & Th.
very common

May 5 - same

3 96 Dactyloctenium aegyptium (L.) Richt.
locally common

calms decumbent, spreading, slightly ascending

1 97 Cyperus rotundus L
locally common

39492 Lewis

on Euphorbia prostrata

J 3 99 Dactyloma ciliaris (Retz.) Kuntze

J 39420 Portulaca oleracea v. Pollen.
literally common

J + 41 Portulaca oleracea L.
very common

causing normally
prostate sterile yellow net.
Calma somewhat needles

prostate, fleshy, flowers
yellow
prostate, fleshy, brownish
flowers yellow, stamens
ten seven, stamens 12-17.

1948 Virginia

May 21 - Great Falls of the Potomac

Rocks overlooking falls -

c. Thyrsolis virginica
c Rumex acetosella
c Houstonia americana
c Lonicera japonica
c Campsis radicans
Cerastium
Fragina
Plantago lanceolata

Open part of park
Poa annua
Anthoxanthum odoratum
Betula nigra
Platanus occidentalis
Liriodendron tulipifera
Taraxacum vulgare
Plantago rugelii
Stellaria media
Salvia lyrata
Valerianaceae quinquefolia
Trifolium arvense

Wooded flats along canal
Stellaria graminea
Galium aparine
Salvia lyrata

Conium maculatum
Cerastium
Linum sulcatum

(Hairy)

Betula nigra
Platanus occidentalis
Rhus toxicodendron
Symplocarpus foetidus
Menispermum canadense

1948 Virginia

May 21 - Great Falls of the Potomac
Rocks overlooking falls -
c. Hypoxolis virginica
c Rumex acetosella
c Heuchera americana
c

Trifolium arvense v. [illegible]

Wooded flats along canal
Stellaria graminea
Galium aparine
Salvia lyrata
Nepeta hederacea
Phacelia
Phlox divaricata
Stellaria media
Alliaria
Osmorhiza longistyla
Podophyllum peltatum
Lindera benzoin
Parthenocissus quinquefolia (hairy)
Veronica officinalis
Cratis europaea
Cercis
Asimina
Celtis
Fraxinus americana
Stellaria pubera
Galium obtusifolium
Smilax hispida
Carpinus caroliniana
Cornus florida
Betula nigra
Platanus occidentalis
Rhus Toxicodendron
Symplocarpus foetidus
Menispermum canadense

1998 Virginia

May 21 - Great Falls of the Potomac
Rocks overlooking falls -
c Polystichum virginicum
c Rumex acetosella
c Houstonia americana
c Lonicera japonica
c Campsis radicans
Cerastium
Fagina
Plantago lanceolata

Open part of park
Toxicodendron
Gaultheria odoratum
Betula nigra
Platanus occidentalis
Liriodendron tulipifera
Taraxacum vulgare
Plantago rugelii
Stellaria media
Salvia lyrata
Parthenocissus quinquefolia
Trifolium arvense

Wooded flats along canal
Stellaria graminea
Galium aparine
Salvia lyrata
Nepeta hederacea
Phacelia
Phlox divaricata
Stellaria media
Alliaria
Tomorhiza longistyla
Podophyllum peltatum
Lindera benzoin
Parthenocissus quinquefolia (berry)
Veronica officinalis
Oxalis europaea
Cercis
Asimina
Celtis
Fraxinus americana
Stellaria pubera
Galium obtusifolium
Smilax hispida
Carpinus caroliniana
Cornus florida
Betula nigra
Platanus occidentalis
Rhus Toxicodendron
Symplocarpus foetidus
Menispermum canadense

1958 Maryland

May 30 - Between Perryville and Aberdeen, observation from train window.

On west side of the Pennsylvania Railroad in open cultivated gently rolling land are shallow depressions without outlets, with standing water, or if dry with vegetation contrasting with the grain in the surrounding fields. Origin of these and of the surface itself not obvious.

June 21 Great Falls

Salvia lyrata y.p.
Elephantopus nutiflorus
Allium vineale s
Celastrus scandens y.p.
Achillea millefolium fl.
Lysimachia ciliata fl.
Polygonia y
~~Hesperis virginica~~ fl.
Asimina triloba y
Penstemon fl.
Galium obtusifolium fl.
Hemerocallis fulva fl.
Rosa carolina fl
Aster (Sericocarpus) fl
Viburnum prunifolium y.p.
Lonicera japonica fl.
Quercus stellata yp
Rhus canadensis y
Galium villosum
Cornandra y
Lepidium virginiam fl
Ilex verticillata fl.
Viburnum dentatum yp
Scutellaria integrifolia fl
Scutellaria ovata fl.
Vaccinium stamineum yp
Vaccinium vacillans yp
Lilium antherinum p
Trifolium perfoliata p
Polygala
Quercus ~~[illegible]~~ phellos s
Parthenocissus quinquefolia fl

Xanthoxia spicata (top of cliff
Clematis (Viorna)
Vincetoxicum
Stipa fr
~~Dodecatheon officinalis~~
~~Phlox~~
Melilotus officinalis fl
Melilotus alba fl
wood Ptelea trifoliata fr
Celtis occidentalis yfr
Dioscorea quaternata fl
(Lvs. green beneath, 3 at lower node)
Staphylea trifoliata s
~~Hexacanthus~~ Ilex decidua s.
Cryptotaenia canadensis fl
Alliaria fr.
Circaea quadrisulcata fl
Dodecatheon media (imp.) fr.
Clayonia virginica fr
Hystrix fr

1958 Virginia

June 21 - Great Falls of the Potomac
rocky flat above river
39502 Polygala obtusata ~~sturtia~~ obovata Blake
sandy semi open spots in
03 Ilex decidua Walt.
in wooded

June 22 - old Civil War fort on
Union Mill Rd. about 1 mi.
south of Centreville
Flat land covered
by cut-over woods, mostly
deciduous, with scattered
Pinus virginiana and Juniperus
virginiana. Trees mostly
about 1 dm. or smaller dbh, but
occasional larger ones
3-4 dm
Well preserved earthworks of
old fort extend for some distance.
Pinus strobus seedlings planted
in ~~rows~~ rows along fortifications 03-
5 ~~herbs~~ ground layer
herbs and subshrubs
Vaccinium vacillans
Fraxinus, Carya + Quercus
seedlings
Gaylussacia hyperoides
Panicum sp.
Amerlaria laevigata
Galium circaezans
Hedyotis purpurea
Stellaria pubera
Dr p. 106

flowers rose pink

arching shrub to 3 m. tall.
several to many stemmed,
frequently sending up root sprouts.

forest is now essentially
[illegible] story forest -
scattered large emergents
[illegible]tely Quercus alba
[illegible]me Carya spp.
[illegible]s Liquidambar

[illegible]-en canopy layer 15-20 m.

[illegible]gely Carya spp.
[illegible]me Quercus alba
Pinus virginiana
Diospyros virginiana
Fraxinus americana

[illegible]nderstory 2-6 m. tall
[illegible]rnus florida
[illegible]cris ~~canadensis~~
Acer rubrum
Quercus alba

4) shrub layer ± 1 m tall
saplings of above broad-leafs
species.
+ Prunus sp. (cherry)

Bypassed Fort

There is a nice quiet, picturesque tract of wooded land, approximately 100 acres, alongside Old Union Mill road, Route 659, in Fairfax County, Va. The location is about one mile and a half South of U. S. Route 29-211 and about 21 miles from Washington.

This site is one of the few remaining Civil War forts in the Washington area. Like a silent sentinel the old fortifications meander along from the north southward across the wooded landscape and about 125 feet west of the Union Mill road. These fortifications are well preserved and are visible from the road.

The Old Union Mill road formerly extended to the railroad, which is about three miles south of the fortifications. This is believed to have been one of the most important fortifications guarding the Federal City and adjacent Northern Virginia territory held by the Union Army.

The property is available for purchase as parkland, at this time at less than one-sixth of the cost per acre that was approved by the Board of County Supervisors for the purchase of the Bissar Fort Marcy tract, in another section of the county.

Observer

1958 Virginia

June 27 - great Falls of the Potomac
rocky flat above river
39502 Polygala obtusata ~~f. ovata~~ Blake
sandy semi open spots on
1 07 Ilex decidua Walt.
in wooded

June 22 - Old
Union Mill Rd
south of Centr
Flat lan
by cut-over
deciduous.
Pinus virginia
virginiana. 7-
about 1 dm. o sm
occasional l
3-4 dm.
Well preserved
old fort extend
Pinus strobus
in ~~four~~ rows alo
5' ~~hedge~~ gr
herbs and
Vaccini
Fraxinus
seedlings
Gaeyuum hyperoids
Panicum sp.
Amerlaria laevigata
Galium circaezans
Hedyotis purpurea
Scutellaria integrifolia

D # 106

...e Chevy Chase Club and the
...olony Club of New York.
Mrs. Grant, the former Cor-
...elia Pendleton, was the grand-
...aughter of the late William L.
...darcy, Secretary of State under
...President Pierce, and the grand-
...niece of the late Senator Pen-
...dleton, Republican of Ohio.
She is survived by her hus-
...and of the home address; two
...aughters, Mrs. Samuel G.
...Dunham of Glendora, Calif.,
...and Mrs. Carle Jackson of
...Baltimore; five grandchildren
...and one great-grandchild.
Services were scheduled at
...St. John's Episcopal Church
...303 Bancroft place N.W., at
...:30 p.m. today. Burial will be
...n Tarrytown, N. Y.

J. W. Pole, Former U. S. Controller

John W. Pole, 87, English-born Controller of the Currency under President Hoover, died yesterday in a Fairfield (Ill.) hospital.
He was appointed to the post from the position of national bank examiner by President Coolidge shortly after Mr. Hoover's election. He served in that post until his resignation in 1932.
The surviving adviser then became president of the Fidelity Investment Association and its affiliate, the Fidel Association of New York.

flowers rose pink

arching shrub to 3 m. tall.
several to many stemmed,
apparently sending up root sprs.

The forest is now essentially
a three story forest -
y scattered large emergents
mostly Quercus alba
some Carya spp.
a few Liquidambar

y) open canopy layer 15-20 m.
tall.
Largely Carya spp.
some Quercus alba
" Pinus virginiana
" Diospyros virginiana
Fraxinus americana

3) understory 2-6 m. tall
Cornus florida
Cercis ~~canadensis~~
Acer rubrum
Quercus alba

4) shrub layer ± 1 m tall
saplings of above broad-leaf
species.
+ Prunus sp. (cherry)

1958 Virginia

June 21 - Great Falls of the Potomac
rocky flat above river

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03 Ilex decidua Walt.
in wooded

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Well preserved earthworks of
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Scutellaria integrifolia
to p. 106

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Cercis ~~canadensis~~
Acer rubrum
Quercus alba

4) shrub layer ± 1 m tall
saplings of above broad-leafed
species.
+ Prunus sp. (cherry)

Parthenocissus quinquefolia
Panthonia spicata
Aster spp. (not in flower)
Rosa carolina
Lysimachia quadrifolia
Lobelia cardinalis racemosa
Dioscorea quaternata
Rubus sp.
Desmodium spp.
Hypoxis aurea
Pycnanthemum sp.
Solidago spp.
Carex stellata ?
Scutellaria ovata

Ditches along the fortification in woods with practically no aquatic or semi-aquatic plants. In one area where ditch approaches road and is open there is an abundant growth of
Carex
Juncus effusus
Scirpus
Juncus sp.
Nuphar advena

June 22 - about 1 mile south of Centreville.
is rather thin second growth mixed woods.
39504 Danthonia spicata
occasional

Cunila origanoides
Anemonella thalictroides
Smilax glauca
Lonicera japonica
Vitis spp.
Hieracium venosum
Oxalis
Antennaria plantaginifolia
Potentilla simplex ?
Hedyotis caerulea
Carex communis ?

Beyond here, where ditches are on the edge of the woods the bottom of the one away from the road has a thin growth of Sphagnum but with none of the normal associated bog plants except one tiny colony of Ludwigia palustris. The Sphagnum here is well established.

3	9506	Hedyotis caerulea	
1		occasional to common	calms solitary & small tufts
2	06	Carex	
		common	small tufts, culms slender, erect.
1	07	Panicum	
		common	mostly in young fruit, occasional plants with lavender flowers blue-lavender, two white marks on palate of lower lip.
1	08	Hedyotis purpurea	
		common	small tufts of weak ascending culms.
1	09	Scutellaria integrifolia	
		rare	
2	10	Carex	
		occasional	
1	11	Galium pilosum	
		occasional	
		same in standing water in trench of old fort, in sunny opening.	
1	12	Lupinus	
		occasional	culms solitary, erect; fruit immature
4	13	Carex louisianica Bailey	
		abundant	culms erect, solitary
4	14	Juncus	
		large colony	erect, heads brown
		same - in open pine woods along road	
1	15	Asclepias variegata L.	flowers white except bright purple base of corona
		rare	
1	16	Rosa carolina L.	flowers bright pink, fragrant
		common	
2	17	Scutellaria integrifolia v. integrifolia	erect, flowers blue violet with two white marks on palate of lower lip.
		common	

1958 Virginia

39513		Stellaria pubera var. Norbanthus Fern occasional but very local (with common blue violet) fern)	Fairfax Co. – Shen. Nat. Pk. 111 erect; flowers bright rose pink, with two cream white marks on palate of lower lip.
	#3	June 27 - Big Meadows Picnic Ground Shenandoah Nat'l Park	
1	19	Botrychium virginianum open grassy woodland	fertile part of frond forked.
		June 27 Elk Wallow Picnic ground Shenandoah National Park in mixed pine and oak woods	
4	70	Bromus sterilis L. small colony several m. across.	
1	21	Stellaria media occasional	spreading, semi-prostrate.
		June 28 Big Meadows Picnic Ground Shenandoah National Park	
1	27	Dennstaedtia punctilobula common in shade of scrubby forest on very rocky gentle slope	fronds light green, almost erect.

July 4 - Timberlake, west of Vienna

39583		Potamogeton diversifolius small colony in small pond.	leaves floating.
1	24	(grass) Festuca obtusa occasional in wooded bottom-land along stream	culms almost erect, tops nodding.
2	25	Athyrium thelypteroides common in wooded bottom-land along stream.	sterile fronds spreading ascending, fertile fronds erect. roots deep yellow; stems prostrate.
3	26	Galium ~~oblongifolium~~ triflorum common in wooded bottom-land along stream	
3	27	Panicum common on slope of earth dam in full sun	culms in small tufts, erect, spikelets purple.
2	28	Panicum on disturbed ground along road in woods, shaded.	culms ascending.
4	29	Carex on disturbed ground along road in woods, shaded	culms in loose tufts spreading, practically decumbent.

July 5 - Woodstock Observatory, ridge on west boundary of Fort Valley

quartzite ridge covered by mixed hardwood forest — Tilia, Quercus rubra, Quercus primus, Prunus serotina, Carya sp. Robinia pseud-acacia, etc. On rocks Spiraea betulaefolia, Aureolaria laevigata, Polypodium vulgare, Woodsia obtusa, Dryopteris marginalis asplenium Platyneuron, etc.

1958 Virginia

July 5 - Fort Valley, at intersection of main road and Woodstock Rd.
Road cut in Devonian shale - Fossil brachiopods abundant, in thin layers, some ferns - cheilanthes and asplenium on ledges and in crevices.

July 5 - Elizabeth Furnace, Fort Valley, Massanutten Mts.
Flat valley bottom covered by cut over woods, mostly small hardwood, some Pinus virginiana, a little P. rigida. The larger pines mostly recently cut out.
Bottom-land along Passage creek rather densely wooded, little undergrowth except occasional ferns.
Passage Creek here is about 6 m. wide with a rocky bed with gravel between the rocks. In shallow places are large colonies of Justicia americana, about 3-4 dm. tall, in flower.

clumps of alnus serulata 3-5 m. tall hang over the banks. Above this is Carpinus, Acer rubrum, etc. In the stream are two of what appear to be fresh water Rhodophyceae. One is a coarse filamentous greenish plant up to 5 cm. long, with conspicuous nodes. The other a brownish gelatinous thallus, broadly lirea, crisped, growing in clumps on rocks and pebbles, frequently small clumps on backs of snails.
The level of the stream at this time is about 2 m. below the level of the flood plain.

1958 Virginia

July 26. Great Falls Park
Ground generally wet.
streams flowing in
small ravines.
Phlox paniculata in flower.
Rabbit, ~~and~~ wood thrush,
crow seen.

July 27 - Little Stony Man Trail, Shenandoah National Park — 3700' 1000 m

39530 Galium — procumbent
common in thick ~~oak~~ hardwood
forest on east slope.

July 27 - Dickey Ridge Picnic
ground
on rocky outcrop in
thin woodland

39531 Galium — procumbent, elongate.
2 common
1 32 Scutellaria — leaves dark green; flowers
uncommon blue-violet with two
white marks on palate.

Plant communities in
S.N.P. that should be described:
Hemlock groves — Meadows
Shade cuts — Locust thickets
Greenstone cuts — Bear oak scrub
Red oak forests — Hardwood coves
Chestnut oak forests — Scarlet Oak - Mt. Laurel
Earth bank along road — Pine woods
Weedy
Mycina

1958 District of Columbia

~~Aug.~~ July 31 - 21st. and P Sts. N.W. Washington

39533 Lolium perenne L.
between sidewalk and curb

21st & P. N.E. corner bet. sidewalk and curb, nearly full sun (a), another short section, more shady (b)

	(a)	(b)
Setaria viridis	c	
Lepidium virginicum	c	c
Digitaria ischaemum	c	c
Polygonum aviculare	c	o
Eleusine indica	c	
Plantago rugelii	o	o
Polygonum pennsylvanicum (P.) sterile)	o	
Lolium perenne		o
Triodens flavus		c

1958 Virginia

Shen. Nat. Park

Aug. 1 - Pinefields Shelter second-growth broad-leaf forest.

39534 Scutellaria serrata Andr. caespitose, 3-4 stems
5" small dense colony in in a clump.
opening in small draw

Aug. 1 - Appalachian Trail north of Pinefield Gap old field with small trees

1 35 Dicdia teres flowers lavender.
local along trail

5 36 Parthenocissus quinquefolia woody vine; leaves
common climbing in glaucous beneath.
bushes and trees

Gentle slopes and rounded low ridges, grassy with inequularly scattered ~~trees~~ young trees, mostly Robinia but locally Pinus rigida, P. pungens, Crataegus uniflora some Sassafras. Two species of Rubus, one erect (R. argut?) and one low, locally abundant, esp. the low one. Many herbs in grassy areas - Chrysanthemum leucanthemum Linaria vulgaris Rudbeckia hirta, Tricostenum (Het. perfoliatum and aurantiacum), Asclepias syriaca, Acrophiliana

1953 Virginia

Aug. 2 - Paine Run Fire Rd.

1600-1700'

Pine-oak woodland

Moderate slope facing north, with scattered Pinus rigida and Quercus falcata spaced unevenly crowns from touching to about their own width apart, mostly 10-15 m. tall, pine trunks up to 2 dm. dbh. A few small P. virginiana a layer 2-3½ m. high of Quercus ilicifolia, Hamamelis, and Kalmia with some Castanea pumila, Nyssa sylvatica and sassafras and oak saplings, forming a rather continuous but not very dense scrub. Castanea dentata sprouts.

Under this a layer ½-1 m. tall of Gaylussacia baccata, Vaccinium vacillans, Menziesia, Kalmia latifolia, Vaccinium stamineum, Pteridium aquilinum, seedlings of Nyssa, oak, sassafras, Quercus rubra, Castanea dentata sprouts, forming a dense scrub.

Ground layer very sparse, of Gaultheria procumbens, Epigaea repens, Vaccinium vacillans, Chimaphila maculata (r) Baptisia tinctoria (in dim spots) Lycopodium complanatum, Hieracium

~~Rub~~ betulaefolia, Iris cristata (?)(r)

1500' Paine Run - rocky bed of stream running across transverse tilted shale beds with crevices Polytrichum and a number of other mosses forming cushions and mats in crevices. Higher plants in crevices characterized by long dense root systems.

c Panicum at least 3 or 4 sp.
o Carex spp.
c Achillea millefolium
c Aster cordifolia
c Eupatorium purpureum
c Hypericum mutilum
r Campanula
Aster lateriflorus?
Viola sp.
o Dennstaedtia punctilobula
o Acer saccharum (sprout)
r Platanus occidentalis (seedling)
o Betula lenta (seedling)
o Hydrangea arborescens
r Nyssa sylvatica (seedling)
o Quercus
r Menziesia pilosa (seedling)
o Pyrola elliptica (seedling)
r Kalmia latifolia (seedling)
r Solidago sp.

1958 Virginia

Aug 2 Trayfoot Mt. Trail up from Paine Run.

1600' Medium east slope with broken quartzite abundant in soil. Low forest mostly Quercus marilandica about 5 m. tall with scattered small pines to 10 m. tall (+Quercus coccinea) Some Quercus ilicifolia Kalmia, Sassafras, Amelanchier arborea (?) (n.), Carya sp. making up a very sparse ~~sec~~ under story 2-3 m. tall.

Dense lower story 0.3 - 0.6 m tall of Gaylussacia baccata and Vaccinium vacillans (+V. stamineum) In open spots Carex sp. Tephrosia virginiana, Baptisia tinctoria.

This is very distinctive but rather restricted Probably represents an old severe fire.

Above this, at perhaps 1750' is denser forest about 15-20 m. tall, of Nyssa, Carya sp. Quercus prinus, Q. coccinea, Cornus florida, Diospyros

Scattered seedlings to 1 m. or more tall of Sassafras, Castanea dentata sprouts

Moderately dense ground layer of Vaccinium vacillans,

seedlings of Sassafras etc.

This third out to almost nothing where quartzite talus is abundant.

2105' Lower end of ridge of Trayfoot Mt. is a quartzite outcrop with low sparse scrub of Quercus marilandica, Pinus virginiana, P. rigida, Rhus copallina, Robinia pseudo-acacia, Rubus argutus, Quercus ilicifolia, Q. prinus, Carya sp. acer rubrum, Amelanchier arborea (?) (n.), etc. Vitis (glaucous trunk) Danthonia spicata in openings.

On quartzite Umbilicaria is abundant, Polypodium vulgare in protected crevices, Tephrosia, Carex sp., Spiraea betulaefolia, Vaccinium vacillans, Potentilla simplex? in openings, also Parnassia virginiana rare, Phlox nivalis var. Heuchera

2200' - 2700' Above this low mixed forest, oaks, pine, Sassafras, etc. In this or ridge several very small openings where all trees have died, dead sticks still standing or bent over. No apparent reason. Possibly all were Sassafras, or Quercus montana, and were killed by a disease.

Aug. x - Skyline Drive, head of Dundo Hollow, just s.w. of Browns Gap 3500'

395'37 Salix caroliniana Michx. shrub 1.5 m. tall.
4 on talus below road

Aug. x - Skyline Drive, Doyle River Overlook, roadside, in hardwood forest 3350' 870 m

4 38 Carya glabra (Mill.) Sweet tree about 10 m. tall,
common fruit immature

3 39 Quercus velutina low spreading tree, 8 m. tall
common

3 40 Polygonum convolvulus L. ascending, old leaves reddish.
abundant on

1 41 Hedyotis purpurea v. longifolia corolla bright lavender.
occasional on

2 42 Tragopogon pratensis L. flowers yellow.
occasional on

3 43 Mentha spicata L. aromatic herb; flowers
abundant on pale lavender.

Aug. x - Paine Run, Augusta Co.
in deepy place along road in
hardwood forest

1 44 Eleocharis
rare

4 45 Scirpus polyphyllus? ~~Ped~~ partial peduncles
common curving upward.

1 46 Scirpus cyperinus (L.) Kunth. erect, heads pendent
rare

#7
same - in crevices in open rock bed of stream

1 47 Panicum
occasional

39548 Carex
rare

x 49 Panicum
common

3 50 Panicum
rare

densely caespitose, culms prostrate & ascending, 1 m. long.

1 51 (grass) Agrostis perennans
rare

1 52 Panicum
occasional

3 53 Carex
occasional

densely caespitose culms ascending, spikes pendent.

1 54 Panicum
occasional

2 55 Juncus Tenuis & Hanetfolius
common

Trays pale lavender & white, disk yellow.

1 56 Aster divaricatus L.
common

1 57 Campanula divaricata
rare

~~pale~~ flowers pale blue-lavender.

1 58 Hypericum mutilum L.

Aug. 2 Trayfoot Mt. Trail, Left hand Hollow, Augusta Co. in mixed pine and hardwood forest

3 59 Galium pilosum at
occasional in thin places

stems ascending

2 60 Hedyotis purpurea var. tenuifolia
common

3 61 Galium circaezans
common

1 62 ~~Phlox~~ ~~maculata~~ ? Penstemon brevisepalus
occasional

39563 Panicum
1 occasional

4 64 Chimaphila umbellata
local on flat ground near stream

1 65 Monotropa uniflora L.
rare, on flat ground along stream

2 66 Asarum hyperi~~cifolium~~ Sw. var.
occasional on steep slope
apparently burned very at
some time

1 67 Lechea minor L.
very local on steep burned
slope.

Aug. 2 - southwest ridge
of Trayfoot Mt.
quartzite ridge

3 68 Asclepias verticillata
occasional in open
1 scrubby woods.

2 69 Clitoria mariana L.
occasional in woods

4 70 Aralia hispida
local on ledges of quartzite
outcrops in open.

~~73~~

same, rock ledges on
west side

3 71 Carex
shaded

3 72 Quercus rubra
common

73 Ribes rotundifolia Michx.
rare on

1550' leaves glossy.

↓

~~multicaule~~ prostrate; flowers
yellow, petals 4, tending
to be in pairs.

flowers white.

stems ascending; leaves
dark green; flowers lavender
purple.
erect, subfruticose herb
up to 0.8 m. tall, ripe fruit
blackish black.

caespitose, spikes drooping.

3 39575 Panicum boscii Poir — creeping
local on ridge in woods

3 76 fasciculatum — flowers white.
rare on great rocks

Aug. 3 - South River Picnic Ground
on roadsides

x 77 Setaria viridis var. weinmannii (R+S) Bean — spikes green
common

1 78 Setaria viridis (L.) Beauv. — spikes greenish
occasional

2 79 Setaria geniculata (Lam.) Beauv. — spikes yellowish
occasional

1 80 Galinsoga ciliata (Raf.) Blake — rays white
abundant

Aug. 3 - Pinefields gap

81 Galium — forming dense tangle, stems 1 m. or more long, flowers cream-white, 4-parted.
local in old-field thickets

1958 D.C.

Aug. 5 – Washington
New Hampshire Ave. between N and O N.W.
Farmer lawn between sidewalk and curb – 3 sections ca 50', one 6', other 50' ± rather well shaded.

	50'	6'	50'
Taraxacum officinale	c v	o	r
Trifolium repens	a v		c
Plantago rugelii	c v	c	o
Plantago lanceolata	o v	o	c
Poa annua	c v		a
Polygonum persicaria	o		
Polygonum aviculare	o v		o
Eleusine indica			o?
Setaria viridis	o	c	o
Muhlenbergia schreberi	o	c	
Bidens bipinnata	r		
Lepidium virginicum		r	r
Digitaria sanguinalis		c	a
Ailanthus altissima			seedlings

Aug. 5 Washington
N St., N.W. bet. New Hampshire ave. and 21st St. thin shade. in 3x6' spaces around trees next to curb. n. side of st. from e. to w.

Chenopodium ambrosioides					r		
Setaria viridis	a	c	a				
Polygonum aviculare	c	c	c	r	o	o	
Plantago lanceolata	r						
Ulmus sp.	c seedlings						
Euphorbia supina	o					c	
Lepidium virginicum	c		o	o		o	
Trifolium repens	r				c		
Digitaria sanguinalis	o	o	c	a	c		
~~Trifolium repens~~	~~.~~	~~c~~	~~r~~	~~c~~	~~c~~	~~c~~	
Plantago rugelii		c	r	c	c	c	
Muhlenbergia schreberi		c			o	o	
Panicum ~~ramosum~~ dichotomiflorum?		c	r		c	o	
Chenopodium album			r				
Bidens flava				o		c	
Viola sp.					r		
Eleusine indica					o	o	
Poa annua						o	
Oxalis corniculata						r	

1958 Virginia

Aug. 6 - Great Falls

Flats between old road and the foot of slope up to entrance road, beyond the horse trail running up to the entrance road and beyond the easternmost picnic ground road are mostly swamps.

The swamp has
Arisaema triphyllum
Taxus canadensis
Impatiens capensis
Dioscorea ~~villosa~~ villosa
Linders benzoin
Ilex verticillata
Rhus toxicodendron
Acer rubrum
Symplocarpus foetidus
Viburnum dentatum
Rubus sp.
Nyssa sylvatica
Cuscuta sp.
Eupatorium fistulosum
Smilax rotundifolius
Osmunda regalis
Osmunda claytoni ? a few.
Polygonum arifolium
Calla
Quercus
Cryptotaenia canadensis
Smilax hispida
Thalictrum sp.

Viburnum ~~tomentosum~~
Rochmeria cylindrica
Parthenocissus quinquefolia
athyrium sp.
Dryopteris cristata
Lonicera japonica
several grasses and sedges.
~~Osmunda cinnamomea~~
Polystichum acrostichoides
+ ~~Polypodium~~ Lycopodium obscurum
on hummocks.

This swamp lies between the cliff below the road and a ridge of schist along which schist, the old road at the south end of the swamp is another ridge. These ridges covered by oak-hickory forest.

1938 Virginia

Aug. 9 – Franklin Cliffs

39582 Polygonum ~~sagittatum~~ cuneatum on rock ledges — decumbent at base

Aug. 9 Skyland around resort

1 83 (cult.) Hesperis matronalis L. one small colony near trail in shade — stems 1 m. tall, mostly in fruit; flower purple.

1 84 Picea ~~excelsa~~ pungens planted near cottage — Tree 10 m. tall, blue-gray.

2 85 Fagus sylvatica var. atropunicea planted near cottage — Tree 15 m. tall, slightly coppery ~~red~~ green.

Aug. 9 slopes of Stony Man Mountain along Appalachian Trail ~~north~~ north of Skyland in mixed hemlock and hardwood forest on steep W. slope

x 86 Betula ~~alleghaniensis~~ lenta common — small tree, bark yellowish gray, wintergreen odor.

x 87 Ribes rotundifolia ? on rock cliff — pendent shrub 1.5 m. long.

~~55~~

Aug. 9 – Little Stony Man Cliffs, along Appalachian Trail

1 88 Spiraea latifolia var. septentrionalis common on tops of cliffs — low shrub 2–3 dm. tall, flowers white, pinkish in center.

Aug. 9 – Stony Man Mountain on wooded summit

1 89 Ilex montana in undergrowth — slender shrub 2 m. tall, fruit immature

1958 Virginia

39590 Ilex montana
on edge of cliff
1 91 Liatris scariosa ?
rare

Aug. 9 - Stony Man Mountain
on open rock cliffs near
summit, north west side
2 92 Juncus
in crevices
1 93 Lycopodium selago
rare in crevices
1 94 Taxus canadensis
colony several m. in diameter
just back of top of cliff
1 95 Polygonum ~~sandersonii~~ tenue
rare on ledges
1 96 (fern)
common in crevices
2 97 Carex
occasional on ledges
1 98 Liatris scariosa
common at tops of cliffs

The rocky ledges and
cliff tops have a characteristic community of Phlox
subulata, Saxifraga michauxii,
Potentilla tridentata, Pennstaedtia
punctilobula, Solidago
wanensis var. monticola,
Liatris graminifolia,
Selaginella rupestris,
Deschampsia caespitosa

dense shrub 2.5 m. tall,
fruit immature.
Stem single, erect, flowers
bright purple.

low, somewhat ascending,
fruit immature, reflexed.

almost erect.

caespitose

caespitose, flowers bright
purple.

Juncus sp. Carex sp.
and rarely, Lycopodium selago.
growing in crevices and ledges
In most localities only
part of these are present.

1953 Virginia

Aug. 9 - Rapidan Fire Road east of Big Meadows shaley cut bank, 45° slope. Discrete clumps of Campanula divaricata up to 1 sq. apart, scattered Lysimachia quadrifolia, scattered Rubus angustus, a few tufts of Panicum sp., Danthonia spicata, Hedyotis purpurea var. longifolia, a few ~~[illegible]~~ Ribes bushes, a few scattered seedlings of various things.

Above this a gently sloping completely stony surface, with scattered clumps of chestnut and Betula lenta sprouts - Abundant Dennstaedtia, Lysimachia quadrifolia, Danthonia and Campanula divaricata, also Aralia nudicaulis, some Aquilegia, Parthenocissus, ~~[illegible]~~ Smilacina racemosa, Viola pinnatifida?, Vaccinium vacillans, Apocynum androsaemifolium, Aster sp. not yet in flower, Ribes, Silene, Lactuca, a few oak seedlings & small

sprouts under 1 m. tall. Smilax hispida, Oxalis Acetosella, Fagus grandifolia, Amianthium (~~muscaetoxicum~~), Uvularia sessilifolia, Corylus americana, Hedyotis purpurea var. longifolia. Chestnut sprouts fruiting abundantly

1958 Virginia

Aug. 9 - Upper Rapidan Fire Road, just east of Big Meadows

39599 Betula lenta
in open meadows — bushy tree 8 m. tall

39600 Agrimonia gryposepala Wallr.
in open woodland — flowers yellow.

1 01 Bromus
abundant around old dump

3 02 Salix humilis Marsh.
occasional in open woodland — ~~spikes erect~~ panicle drooping, culms erect, shrub, many stemmed from base, to 2.5 m. tall, sprouts 1.5 m., leaves glaucous beneath, heads erect from shallowly buried rhizome, small bushy fruit immature

3 03 (fem.) Dennstaedtia punctilobula
abundant in edge of forest on flat ground — fronds erect from rhizome deeply buried between rocks.

2 04 Ribes
occasional on very rocky open ground

3 05 Dennstaedtia punctilobula
abundant on very rocky ground in open.

Aug. 10 - Canyon of South River
north side, along Fire road.
in road, shaded.

1 06 Polygonum punctatum — flowers greenish, spike nodding.

1 07 X Polygonum lutium — flowers pinkish white.

1 08 Galium triflorum var. asprellifolium — prostrate; flowers pale green.

Aug. 10 - head of South River Falls
South River

2 09 Betula ~~lutea~~ alleghaniensis Britt.
bottom of wooded canyon — tree 15 m. tall, wintergreen odor when broken, bark yellowish gray.

Aug. 10 - flats north of South River, in detached area of Shenandoah Park on left fork of South River Fire N.

Old field grown up to locust thickets of Robinia, Sassafras, Pinus virginiana, Cornus florida, Populus canadensis, with some Rhus typhina, R. glabra, Pinus strobus, P. rigida, Liriodendron, Pyrus malus, uneven height but mostly 5-10 m. Vitis, Parthenocissus, etc. common.

Opening with Fragaria and Rubus flagellaris dominant, Aster, ericoides, Solidago spp. Chrysanthemum Leucanthemum, Prunella, Achillea, Daucus carota, Cirsium lanceolatum, etc. common.

Aug. 10 - South River Cemetary open ground in old weedy cemetary

39	10	Vinca minor abundant	prostrate; sterile.
1	11	Spiraea trifoliata common	slender shrub 1-1.5 m. tall, sterile.
5	12	~~Rosa~~ Miscanthus sinensis common	large clumps ut & 2 m. tall, with last years panicles.
1	13	Dianthus barbatus common	sterile
7	14	Pinus rigida ~~near~~ open old field with scattered trees	tree 8 m. tall.

1958 Virginia

Aug. 10 - 1 mile north of South River Overlook, on Skyline Drive
Around old farm site

3 96 15 Syringa vulgaris L.

" 16 Buxus sempervirens L.

" 17 Abies balsamea

" 18 Rosa canina L.?

" 19 Rosa cinnamomea L.?

" 20 Pyrus communis
common in hedges and old fields

" 21 (grass) Arrhenatherum elatius
roadside

980 m.

small tree 8 m. tall, very bushy; fruit immature.
~~shrub~~ very dense shrub.
bushy small tree 4 m. tall, tips of twig bent down - diseased = mutant form?
scrambling bush, leaves dark green, sub-glossy above. flowers rose-pink.
scrambling bush, leaves dull above. sterile. very densely branched shrub or tree, 6 m. tall, fruits immature.
culms erect, panicles nodding.

1952 Trip to Bloomington New Jersey

Aug. 21 - Clifton - Triassic shales and consequent purplish red soils begin here. Curious ~~erosion remnants~~ of basalt intrusions on boundary Clifton - Little Falls and well into Little Falls, forming a complex dissected wooded ridge, quarry and many houses with. Deciduous forest.

Pellington - pale gray-brown soil. Gallery forest along Pompton River very tall, pin oak, etc. Flat country w. fine with pale brown alluvial soil with large boulders. Mostly farmed but some small second-growth wood-lots. Largely Acer rubrum. Betula populifolia; some oaks. Extends past Rockaway River. Mostly small farms scattered trees and small bits of woods. Scattered large oaks. Higher ground is wet has several nice patches of woods.

Two egrets in pond 1/2 mi. east of Denville.

Mountain Lakes Borough made mixed woods in low rolling hills.

East of Dover near Rockaway River low hills are of either

glacial material or outwash alluvium. South of Dover in distance are wooded hills or low mountains.

East of Dover some humps of grein, etc. sticking up through alluvial material.

Between Dover and Netcong are hills of a hard rock, some parts look like granite, parts darker and denser, cut by dikes. Wooded.

All woods in this part of state are deciduous.

Budd Lake, lined with resorts and swimming beaches. 1050+' alt.

West mixed woods on slope. Then a plateau of stony alluvium. Then a series of ridges and valleys running n.e.-s.w. the ridges wooded.

Musconetcong River Valley flat and in farms, bounded by long rounded ridges. Ridges wooded with many cleared fields and pastures, some abandoned, fertile flat ~~east~~ bottom-lands along streams farmed more intensively.

Valley of Pequest River

broad flat, in places. Ridges on both sides mostly wooded, especially Mt. Mohepinoke on n. w. side.
This area is a miniature "valley and ridge province". Rocks varied but not well exposed along highway. Woods all deciduous, not a conifer seen anywhere except cultivated spruces at Buttzville. A few juniperus virginiana also, wild, at Buttzville.
Near Manunka Chunk bluffs of Phyllitic shale. A conifer here that did not look quite like Tsuga - more like Larix, but probably not. Did not get a good look at it. Probably Tsuga
Mine just south of Delaware on bluffs. Possibly Picea abies or P. glauca. Otherwise all deciduous.
Delaware Water Gap – on south sided steep wooded slopes interspersed with bare rock cliffs and scree slopes. Much more cliffs and talus on north side. Great scree slope invaded by Betula, juniperus, etc.
On bluffs forest is mostly broadleaf, but some conifers (Picea? Juniperus? Abies?!) ~~are~~ and

Pinus.
On Pennsylvania side after passing Gap the conifers form a noticeable component of the forest – much Betula, some tulip, Platanus, Juglans, Ulmus, Quercus.
Up on Pocono terrace beyond Stroudsburg, to beyond Tannersville, a mosaic of woods, fields, etc. The woods principally deciduous but with a considerable coniferous component. Conifers – Tsuga, Pinus. These more abundant westward.
This country, along the highway, ~~is~~ has a very manicured appearance. Fine patch of medium growth Tsuga on left of turn-off to Pocono at Swiftwater. Road to Pocono through much wilder country, still some cottages, etc.
Red pine, paper birch, white pine, black birch, elm, sugar maple, hickory, chestnut oak, red maple, sassafras, red oak, chestnut sprouts.
Most of this is very ~~typ~~

young second growth,
5-8 m. tall with scattered
larger trees. Some much
younger, very brushy.
Some Pinus rigida
with birches, red maple,
and oaks. Q. ilicifolia.,
Viburnum cassinoides,
Populus tremuloides, typical
fire country.
Conifers - Pinus strobus,
P. resinosa, P. rigida, Picea
rubens, Tsuga, plus
introduced Picea engelmanni
P. abies, Pinus sylvestris, Larix
laricina (?) very noticeable
around Pocono Pine, but
not dominant. Birches,
Acer, Populus, etc. abundant.
Beautiful patch of Tsuga
wood west of Pocono Lake.
West of this much planting
of miscellaneous conifers
in old fields, more beautiful
old hemlock and hardwood
forest.
Halfway bet. Pocono Lake and
Blakeslee a farming area
begins. Then more brushy
woods, conifers and Populus
tremuloides. Then much
planting of blue spruce -
for christmas trees?
The country east of here was

evidently what 20 years
ago was largely an open
burned over country
dominated by Hypnum latifolia.
West of Blakeslee, also,
is scrubby second growth.
Rhododendron maximum
common in woods east
of E. side. All of the
woods here are second-growth
slender, 10-15 m. tall, or
locally to 20 m. Mostly
Betula and Acer rubrum,
very few conifers. Red
Triassic shale makes up
the east side of the Lehigh
Valley at White Haven.
West side also.
Between White Haven and
Freeland a broad valley
with orchards, ridges &
sides wooded. Road cuts
in shade covered by
Comptonia peregrina, invaded
by Betula spp.
Toward Freeland very
scrubby mixed deciduous
second growth. Much
scrub, principally Quercus
ilicifolia, with scattered
trees.
Beyond Freeland are many
open pit coal mines and
enormous bare culm piles.

1958 Pennsylvania

Aug. 21 between Freeland and ~~Hazle~~ Ebervale, Luzerne Co.

39622 Echinochloa
" desiccating roadside pool in coal mine area

Southwest of Hazleton are vast areas of open pits and culm piles. Betula is making some headway invading the culm piles. Farther on much older mines, somewhat wooded, mostly with small birches. Beyond Sheppton in valley of Catawissa Creek more purple Triassic(?) shale.

Aug 22 - Bottomlands along west branch of Susquehanna River above Northumberland - mostly farmed but some small patches of dense woods, largely Robinia and Acer saccharinum.

Valley of Buffalo Creek, west of Mifflinburg - broad rolling flat bottom, almost all farmed with hedgerows of trees. Long ridges on both sides completely wooded except for conspicuous bare spots of talus on north side. Deciduous woods

w. s. of Hazleton

culms spreading to ascending, spikelets ~~dark~~ deep maroon a green.

with considerable conifer admixture and patches near the top on south side. Sharp break in character of forest about ⅓ the way up on north side, probably corresponding to a change in slope. The lower third much finer textured, possibly second growth.

Pennsylvania State forest on high ground between this valley and the one where Woodward is located. Dense hardwood forest. Nice picnic ground. Valley to west very similar to that of Buffalo Cr., more hilly.

East of State Coll. are several ridges of bedded bluish-gray limestone.

From northwest of State College on top of wooded ridge, looking northwest a path across Eagle Creek is a great expanse of woods, mostly deciduous, some admixture of conifers. Valley bottoms with clearings. (Photos 21-22 (1/2)). From the prior

1958 Penna.

South slope of Eagle Creek Valley covered by a dense second growth forest, about 10 m. high. trees up to 15 cm. diam. mostly much less.

Quercus rubra
Quercus alba
Betula lenta
Acer rubrum
Quercus prinus
Fraxinus americanus
Rhododendron catabiferum
occasional small Tsuga + Pinus strobus

Thin understory of Cornus florida, Acer pensylvanicum, smaller Kalmia latifolia, ~~seedling~~ Betula etc.

The cut banks of the highway grassy but abundantly invaded by Robinia pseudo-acacia. The source of seeds not at all evident.

Similar woods almost continuous, except for one fair sized open area, almost to Phillipsburg. Being logged in a few spots.

Moshannon State Forest bet. Clearfield and Rockton is

dominantly a mixture of oaks, with occasional other trees, where it has not been cut or burned recently.

Cook Forest State Park - magnificent hemlock and white pine (several photos). 4 acres of cathedral area thrown by wind - mostly cleared out by Pa. Dept. For. + Waters to protect the public from fires. A few trees left to show public what storms do.

Aug. 23 - Bottomlands of Muskingum River bet. Coshocton and Dresden along highway (#37)

Large areas of marshland, some swampy woods and sloughs, cultivated fields, hay and maize, on higher areas.

Near Trinway in a wooded slough 6 wood ducks. Many aggressive mosquitos.

Woods along slough of large elms, Juglans, Platanus, Populus deltoides, Quercus prinus (a very broad leafed Q. bicolor), Acer negundo,

Little Muskatonikus

~~and~~ Prunus serotina, Gleditschia triacantha, Acer saccharum in understory deciduous ostandia, Fraxinus americana intermixed, etc.

Campanula americana very common in edges of wood, much darker blue than in Virginia. Tall blue and yellow Lactuca abundant. Smilax, Vitis, and a very large Polygonum sect. Tiniaria climbing in edges. Impatiens capensis and I. pallida with flowering

Aug. 24 - several miles south of Bunsey - open bottom-land forest, principally Juglans nigra, with conspicuous ground layer 1 m± tall of a sunflower. Fields nearly with conspicuous stands of Veronia.

1 m. of Hartsville outcrops of ~~b~~bedded limestone on edge of broad shallow stream ravine. Farther along where rock does not outcrop is a beautiful juniper woodland on rolling hills which form the edge of the ravine.

Aug. 26 - southeast of Bloomington, Monroe Co.

Deeply incised drainage system of Salt Creek about 250' relief. canyon walls densely wooded. The woods badly cut over and composed mostly of small sized trees, entirely deciduous oak-hickory, with some tulip, much Sassafras, etc. Flat ridge-tops and bottoms cultivated or pastured. Soil rather sterile, first crops after clearing very good, soon falling off. Also especially on ridges. Bottom lands still rather intensively farmed, ridges not so much so. much sumac, brush, Sassafras, etc. on abandoned fields.

Nearer to Bloomington is a rolling outwash plain, more intensively farmed but very worn-out. much land abandoned. Wahl farm being largely turned into pasture - very sterile soil being heavily fertilized, planted to grass, clover and lespedeza striata. Thinning grazed lightly. Area - forest and game preserve.

1958 Indiana

Aug. 22 - Pine Hills

Gorge cut several hundred feet into a flat plateau of horizontal sedimentary beds. On the flat upland most of the vegetation is old field thicket with introduced pines

Where there is good forest it is mostly white oak with some ~~acer~~ nigrum var. and some Carya, some other oaks (q. velutina?).

On knife-edge ridges Melilotus alba Physostegia virginiana, dwarf form of Monarda fistulosa, etc.

Generally speaking the plateau is covered by oak-hickory forest with emphasis on oaks and considerable tulip. The slopes and bottoms are covered by beech-maple with abundant hemlock and some white pine, much Ostrya, Carpinus, etc.

On ~~steep~~ slopes the vegetation is mixed - ~~on flat~~ on gentler ones Tsuga is very common, mixed with beech Epifagus common but no Houstonia. Occasional tulip, red oak, sugar maple. Mitchella common.

Steep slopes have hemlock, Tsuga, Fagus, Ostrya. Cliffs in places bare.

Dusty ledge under overhanging bed of sandstone has large colony of ant lions. Large lead insects common, fairly large larvae caught and struggling a almost dead.

Bottom-land with Ostrya, Carpinus, Fagus, Populus deltoides, Liriodendron, Asimina, Platanus, Cercis, Acer nigrum, Cornus florida,

Finished Kodachrome roll on entire acer roll, started another, various views.

1998 Indiana

Aug. 24 - Pine Hills.

39623 Echinochloa
" in road in old field in full sun
" 24 Echinochloa
in road in shade around mud hole
1 25 Hedyotis purpurea var. calycosa
on knife-edge ridge on
sandstone, almost full sun

Aug. 27 - Wabash Natural area,
Sugar creek, northwest of
Annapolis, Parke Co.
Partly old second-growth
forest small part old
field with ~~woodlot~~
scattered small sapling
regrowth.
The second growth nature
is indicated by large
Sassafras albidum in
abundance, even though
some oaks and beeches
are up to 1 m. dbh. The
forest is mixed Quercus
alba, Q. rubra?, Q. palustris?
Acer nigrum ass. Fagus
grandifolia, etc. Ulmus sp.
Some of the red oaks are
succumbing to oak wilt.
In parts there is an
abundant layer of
Ulmus saplings up to about
1 m. tall, though few seem
to attain more than that size

FIELD TRIP TO PINE HILLS AND THE WABASH NATURAL AREA, SPONSORED BY THE ECOLOGICAL SOCIETY OF AMERICA, THE NATURE CONSERVANCY, AND THE NATIONAL ASSOCIATION OF BIOLOGY TEACHERS, ON FRIDAY, AUGUST 29, 1958

Description of Pine Hills

Smith (1933) has described the geology and geomorphology of Pine Hills, and presents a topographic map of the area. Pine Hills lies within the glacial boundary in west central Indiana, occurring in the Till Plains Section of the Central Lowland Province. The physiographically most striking features of the region are the deeply entrenched meanders with nearly vertical walls of two tributaries of Sugar Creek. In referring to the sharp ridges, or "backbones", thus produced, Smith says, "Without exaggeration, they may be considered as the most remarkable examples of incised meanders in the eastern United States. In fact, although they are exceeded in magnitude by such features in the Rockies, none exceeds them in perfection and in interest." The cause of meanders in such youthful topography Smith attributes to the peculiar effects of weathering and erosion in the Bordon formation, this being especially susceptible to undercutting. All the bedrock exposed at Pine Hills is referred to this formation, and is composed mostly of shaly sandstones, only a small portion of which is fossiliferous. Owing to erosion glacial drift is thin to absent in the vicinity of the gorge.

With regard to the vegetation, Friesner and Potzger (1934) have written: "Botanically this region exhibits a larger number of excellent and clear-cut forest ecological areas and associations than any other region in Indiana known to the writers. For example: There are wooded old flood-plain terraces along the meandering streams, where they have cut wider valleys; second terraces or still older flood plains now occupied by dense stands of deciduous forest trees; upland plateaus into which the canyons have been cut; Pinus-Tsuga slopes; transition areas between the preceding two; Tsuga-covered canyon walls; Pinus-Tsuga groves, and Taxus associations on north-facing canyon walls where the angle approximates 45 degrees." A vegetation map and quantitative data are presented in this publication. The authors conclude that Acer saccharum is the "climatic climax" of this region, Fagus being greatly reduced compared to the area of Indiana to the east. Tsuga canadensis, here at the western margin of its range in the central states, and Pinus strobus are considered as relicts of a changing postglacial climate by those authors. Both these species occupy drier sites than the adjacent Acer-Fagus forest, as suggested by soil moisture and evaporation studies in certain other Tsuga-Pinus sites in Indiana. Soil pH studies indicate a decidedly more acid condition under the Tsuga stands than in adjacent deciduous forest (Potzger and Friesner 1936). The area has doubtless been selectively lumbered in the past, and in fact, one of the backbones ("Mill-Cut Backbone") was excavated at one point in the 1850's to operate a small woolen mill for a few years from the flow of water through the cut. The owners of the land have planted several species of pines on abandoned fields on the upland approaching the gorge.

Literature Cited

Friesner, R. C., and J. E. Potzger. 1934. Climax conditions and ecological status of Pinus strobus, Taxus canadensis, and Tsuga canadensis in the Pine Hills region of Indiana. Butler Univ. Botanical Studies 3:65-83.

Potzger, J. E., and R. C. Friesner. 1937. Soil acidity and hemlock reproduction in relic colonies in Indiana. Proc. Indiana Acad. Science 46:93-99.

Smith, E. R. 1933. The physiographic features of Pine Hills Nature Study Park, Montgomery County, Indiana. Proc. Indiana Acad. Science 42:153-161.

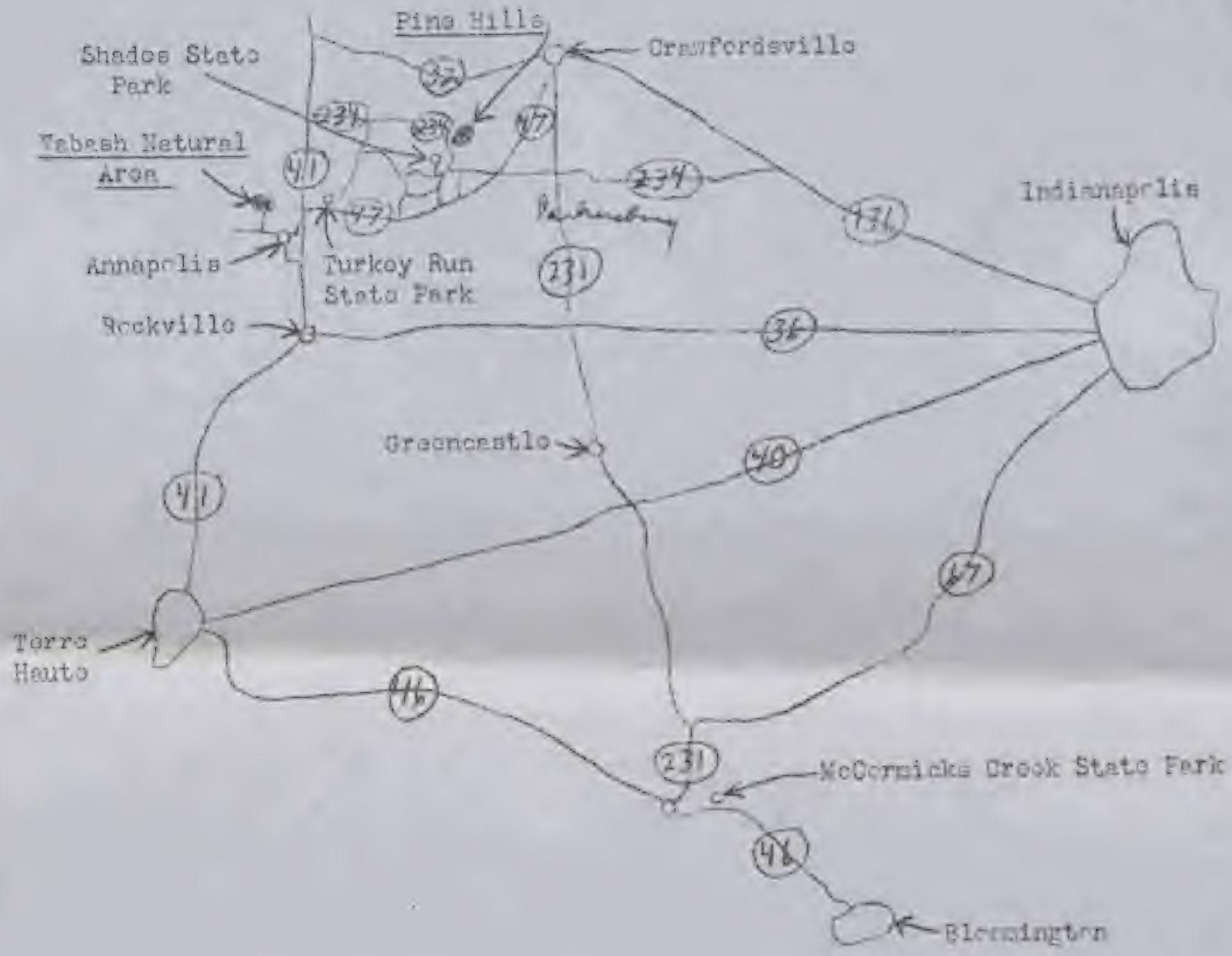
The Wabash Natural Area

Wabash College has recently been given jurisdiction over the late W. C. Allee farmstead, a 160 acre tract of mostly wooded land of rough topography bordering Sugar Creek. Dr. Allee had intended to retire to this area and continue his ecological research, but this wish was never fulfilled. A long-term ecological research program, however, has now been initiated on the property by the staff of Wabash College, under the direction of Dr. Richard Laubengayer. The project is financed by the Atomic Energy Commission, and involves taking as complete an inventory of the biota as possible, together with a detailed analysis of the environment, to serve as a basis for evaluating the effect of fallout on natural and seminatural ecosystems in this region. Several thousand dollars worth of instrumental equipment for microclimatological and soil measurements has been installed, and a laboratory building is being constructed on the premises. In addition to vegetational, microclimate, and soil analyses, such varied projects as rates of decay of wood, the limnology of Sugar Creek, migration of box turtles, old field succession, and the morphology and life history of Epifagus are also being investigated. The area and facilities are available to college classes and research workers from neighboring institutions as well as those from Wabash College itself.

IT IS REQUESTED THAT VISITORS NOT COLLECT IN PINE HILLS
OR THE WABASH NATURAL AREA

Field trip leaders: John Polton, Butler University, and Richard Laubengayer, Wabash College.

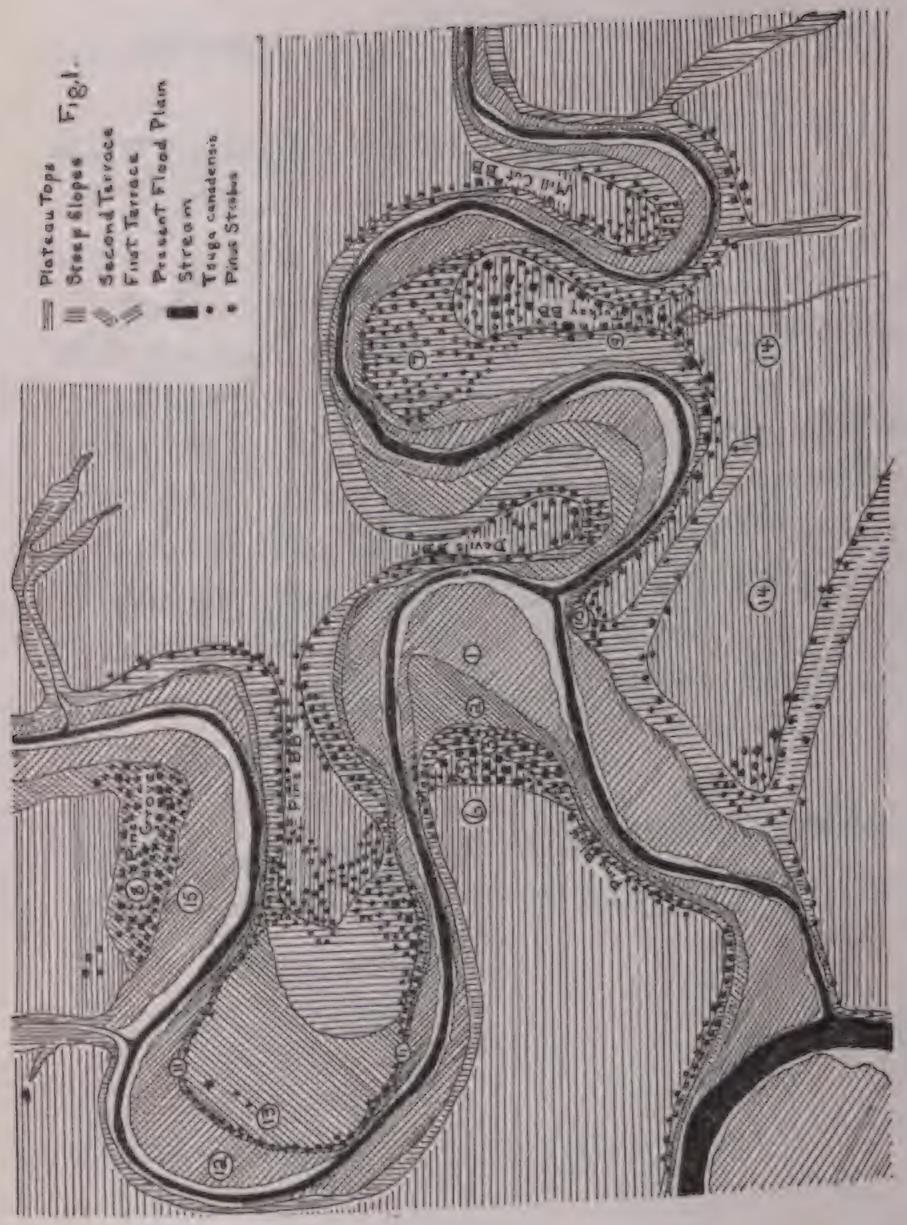
DIRECTIONS FOR REACHING PINE HILLS AND THE WABASH NATURAL AREA



To reach Pine Hills from Bloomington: Take Highway 46 to Spencer; then Highway 231 north to its junction with Highway 234. Turn west on 234 until a sharp turn north occurs in the road one mile east of Shades State Park. Continue north (on 234) for about one mile. A white house and red barn is situated on the west of the road, and cars may be parked here along the roadside. A jeep road extends to the east about ½ mile to the gorge.

To reach the Wabash Natural Area from Pine Hills: Drive south to Highway 47, and then west to Highway 41. Turn south on 41 for about 1.4 miles, at which point turn west (at a Cities Service Station)on the road which will lead to the small town of Annapolis. Continue west on the gravel road leading out of town about 1.3 miles until the second road to the north is reached. Take this road to the Allee farm (0.4 miles). The road to the northwest of there leads to the instrumental stations and woods. Cars should be parked in the field about 0.3 miles from the Allee farmstead.

N


Plateau Tops
Steep Slopes
Second Terrace
First Terrace
Present Flood Plain
Stream
Tsuga canadensis
Pinus Strobus
Fig 1.

culms spreading 3 ext.,

culms erect, 3 1.4 m. tall.

small clumps, flowers white.

and Ulmus is not abundant in comparison. Instruments that the Wabash College people have in old field and in woods indicate that the relative humidity and soil moisture are lower in the woods than in the old field.

4 fern plants in beech-maple-oak forest.

1958 Indiana

Aug. 29 - Pine Hills.

39603 Echinochloa
2 in road in old field in full sun

2 24 Echinochloa
in road in shade around mudhole

1 25 Hedyotis purpurea var. calycosa
on knife-edge ridge on
sandstone, almost full sun

Aug. 29 - Wabash Natural Area,
Sugar Creek, northwest of
Annapolis, Parke Co.
Partly old second-growth
forest, small part old
field with ~~scattered~~ scattered small sapling
regrowth.
The second growth nature
is indicated by large
Sassafras albidum in
abundance, even though
some oaks and beeches
are up to 1 m. dbh. The
forest is mixed Quercus
alba, Q. rubra?, Q. palustris?
Acer saccharum var. Fagus
grandifolia, etc. Ulmus sp.
Some of the red oaks are
succumbing to oak wilt.
In parts there is an
abundant layer of
Ulmus saplings up to about
1 m. tall, though few seem
to attain more than that size

culms spreading to erect,

culms erect, to 1.4 m. tall.

small clumps, flowers
white.

and Ulmus is not
abundant in canopy layer.
Instruments that the
Wabash College people have
in old field and in woods
indicate that the relative
humidity and soil
moisture are lower in
the woods than in the
old field.

A few plants in beech-maple-
oak forest.

1958 Canada

Sept. 1 - Point Pelee National Park, Lake Erie, near Leamington.

A triangular spit jutting out into Lake Erie near its western end. Consists of a beach ridge on both sides enclosing low ground with extensive ponds and Phragmites marshes, these not connected with the lake. Along the west side are many lots with cottages in private ownership, several fields and orchards. The slightly higher sandy ground along the west side and near the point is covered by a deciduous forest with a large admixture of Juniperus, mostly tall rather typical J. virginiana but with also, in open places, a considerable series of low ascending and spreading to prostrate forms, possibly forming a hybrid complex. Around the margins of this forest Ptelea trifoliata and Rhus canadensis are common. Asparagus officinalis, escape.

Birds are plentiful.

The beach along the west side of the point is stabilized by much very ugly L shaped slabs of concrete.

Between Windsor and Leamington is a thoroughly agricultural area on low broad terraces bordering the lake. Among crops noticed were peaches and a very little tobacco. The leaves of the latter were very large and a pale whitish green. Tomatoes are produced in great abundance.

Sept. 2 - East of Leamington at least to Blenheim, tobacco is one of the principal crops, with maize and tomatoes, some peaches and plums.

Woodlots are extremely scarce, somewhat more common eastward till at Blenheim and eastward they are more a part of the landscape.

Along the shore are cliffs perhaps 10 m. high, bounding a very wide terrace of clay with small gravel which is eroding at the edge so rapidly that there is little or no vegetation on them (Photo). Along the cliff top the principal plants are Solidago and

1959 Canada

aster a low masses of Rhus and Vitis sp.

Sept. 2 - 11 mi. w.s.w. of Cedar Springs, 4 mi. s.s.e. of Merlin, on Lake Erie.

396 26 Vitis riparia Mx. possibly sp. n. optimus climbing on bushes at edge of cliff

extensive woody vine. fruits blue. black, not sweet and with a disgusting flavor.

2 27 Ludwigia polycarpa. very common in dry roadside swale.

3 28 Echinochloa very common in drying roadside swale, with #39629.

3 29 Echinochloa very common in drying roadside swale with #39629

Sept. 2 Rondeau Provincial Park Lake Erie.

Flat sandy peninsula densely wooded in interior with mostly beech-maple, some elm and oak, prominent shrub layer, sparse ground layer.

At point two Pins the forest is largely Fraxinus nigra (?) Quercus rubra ??, Pinus strobus, Quercus alba, Tilia sp. Sassafras, etc. Soil is a mixture of sand and gravel. Rather thick undergrowth of Fraxinus and Sassafras

culms almost erect.

saplings. Thick ground layer of many herbs and very small shrubs and seedlings.

A strip back of the beach about 10-15 m. wide has herbs such as Panicum (2) sp. Polanisia, Artemisia, Andropogon scoparius, Apocynum cannabinum (a prostrate form), Andropogon gerardi, etc. Rhus toxicodendron (dwarf form).

Euphorbia spectabilis

Salsola kali var. tenuifolia

The Quercus rubra here is very odd. Lobes not V shaped buds large. hairy.

170 1958 Canada

In gen. beech Ulmus, Ostrya, Fagus, Acer rubrum, Acer nigrum var. become common. Rhus toxicodendron and R. canadensis common in ground cover. Maianthemum occasional, here under hardwood.

A gen of Asclepias tuberosus with very small cypsela and pale orange flowers common in clearings back of beach

In central part of park in deep forest is an elm about 100' tall, 7 ft. + diam. above buttresses. Buttresses very wide, about 4 ft. high. Dense ground cover of Trillium, Collinsonia, Onoclea. Area low, swampy, with beech-maple forest. Nearby a Populus deltoides well over 100 ft. tall and over 3 ft. dbh. Most trees in area have slight development of buttress.

found here parallel in adjacent area from beaches. Early June 4 i.m.s. west.

East of Morpeth the tobacco gradually drops out, maize and hay are principal crops. Woodlots become larger and more frequent, some apparently natural, some planted. Some pasture. Near Clearfield

People come here for relaxation and enjoyment. Camping offers pleasure to many people. Please do not intrude upon, or disturb the enjoyment or rest of your fellow campers.

The Naturalist Programme of conducted walks, illustrated talks, labelled nature trails and a museum will increase your pleasure of the Park.

Rondeau attracts large numbers of people who come to enjoy a picnic, the beaches, or the natural setting. You can help to make your stay, and that of others more pleasant by being tidy. Containers are provided for all refuse. Broken bottles are dangerous when left lying on the ground. A commendable practice is, "leave the site a little tidier than you found it".

Fires are ever a problem and a hazard in a woodland park. Fireplace grilles are provided for your convenience, and also for your protection, as well as others. A fire that has been reduced to "DEAD OUT" can neither harm anyone, nor this beautiful Park.

Bath houses are provided on bathing beaches for those who come to swim. They must be used for dressing and undressing.

All rules and regulations in force, are based on a respect for the rights of yourself and all others.

Park Rangers are here to help you; you can help them by following the rules.

Suggestions or constructive criticisms are always welcome. We too can learn.

Clare E. Mapledoram
Minister.

F.A. MacDougall,
Deputy Minister.

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ONTARIO

DEPARTMENT
OF
LANDS AND FORESTS

Division of Parks

WELCOME TO:

R O N D E A U P R O V I N C I A L P A R K

Rondeau Park is a beautiful area in which has been preserved about 2000 acres of the finest hardwood forest types in Southern Ontario.

Many of the trees and plants growing in the Park are rarely found farther inland. Rondeau also embraces about 2000 acres of marshland. The combined area offers a habitat which attracts many species of birds and small mammals. A sizable deer herd thrives in the Park.

Sand beaches provide water recreational activities par excellence. There is opportunity for the angler to indulge in this favoured sport.

To "YOU", the visitor

This unique Park is maintained for your enjoyment by the Ontario Department of Lands and Forests. The woodlands, the beaches, the camp and picnic areas, the museum and nature trails, the buildings and facilities are maintained for your convenience and recreation. We ask that you care for them as though they were your own.

RONDEAU PROVINCIAL PARK

MAIN ROADS
SECONDARY ROADS
TRAILS

0 ½ 1
MILE

RONDEAU "THE EAU" BAY
FISHING
SAILING
BOATING
MARSH
NATURAL AREA
PICNIC AREA
BEACH
TOILET
CAMP AREA
BEACH
DILLON TRAIL
NATURAL AREA
NATURAL AREA
EAGLE'S NEST NATURE TRAIL
RONDEAU PARK ROAD
GARDINER ROAD
INDIAN CLEARING NATURE TRAIL
HARRISON TRAIL
LAKE SHORE ROAD
BEACH
RONDEAU NATURE TRAIL
BENNETT ROAD
RIDING STABLE
BEACH
SMALL BEACH
DOCK
TOILET
REFRESHMENT STAND
PICNIC AREA
TOILET
MUSEUM
PARK OFFICE
CAMP AREA
TOILET
LAKE ERIE

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a series of pastures ~~sto~~ showing various stages in succession from grass to Crataegus thicket.

Near Eagle a different sort of tobacco is common, called "brightleaf" with taller bushier habit, and smaller greener leaves. This common here but not seen much elsewhere.

Near St. Thomas country is more intensively cultivated with less woods, but with prominent hedgerows. East of St Thomas considerable grain.

The country near St. Thomas becomes more rolling and not perfectly flat as it is farther west. Orchard dropped out completely.

Eastward the land is rolling, some woods. From Tillsonburg to Simcoe one of the principal crops is "brightleaf" tobacco. There are many woodlots and groves, some pastures. The tobacco is just starting to be harvested. The leaves are picked off, leaving the stalks standing.

In pine beach Ulmus, Ostrya, Fagus, Acer rubrum, Acer nigrum var. becoming common. Rhus toxicodendron and R. canadensis common in ground cover. Maianthemum occasional, here under hardwoods.

A form of Asclepias tuberosus with very small copper and pale orange flowers common in clearings back of beach.

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ground level parallel to ridges, alternating from beach to ridge & vice versa.

East of Morpeth the tobacco gradually drops out, many and hay are principal crops. Woodlots become larger and more frequent, some apparently natural, some planted. Some pasture. Near Clearfield

a series of pastures showing various stages in succession from grass to Crataegus thicket.

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1958 New York Virginia

Ulster Co. Fairfax 173

Sept. 4 - ~~between~~ just north of Arkville, Catskill Mts.

39630 Echinochloa crusgalli var. frumentacea (Link) Wight cultivated as a field crop

Culms erect, panicle compact, purple and green.

Catskill Mts. are well wooded with hardwoods with a liberal admixture of Pinus strobus and Tsuga canadensis, some Thuja plicata but this might be planted. Near the top of some high peaks and ridges are slides or some slopes more or less bare of vegetation or only sparsely vegetated.

Sept. 13 - Sleepy Hollow, 1 mi. south of Falls Church, Fairfax Co. Va.

In mixed pine and hardwood second-growth forest on gently slop

1 31 Ulmus ~~americana~~ parvifolia Jacq. rare

young ~~sapling~~ up to 1.5' - 2 m. tall.

1 32 Ulmus procera Salisb. rare

small tree 4 m. tall, with deeply fissured very corky bark.

1958 Virginia

Betula populifolia along roadside

Oct. 17 - photo of mixed hardwood forest with many fields in post. west of Marshall.

photo of mixed hardwood on hill s. of Markham. yellow Liriodendron, red canes, grasses still green. another, similar.

Bet. Markham and Front Royal

photos of hardwood forest east side of Skyline Drive at about m.p. 9. same from Rattlesnake Point Overlook - showing Liriodendron.

From Front Royal to about m.p. 9 Sassafras rather abundant in most places along drive. Large areas of a very uniform low forest on ridges and gentle slopes - reddish brown in color.

Some steeper ridges and west facing slopes have a similar red-brown forest - probably Q. montana and Q. rubra a velutina - photos from Beach Bottom Overlook to and north, across Thornton Gap.

Bet. m.p. 39-36 a fine area of uniform oak forest - Q. rubra - velutina? orange brown. Photos from Pinnacles Picnic Ground, also one of Crataegus at Picnic Ground entrance.

Two photos north at Big Meadows one showing Hawksbill, other a

clump of Betula populifolia.

Eaton Hollow Overlook 2500' - 3 photos n.e. over Eaton Hollow - cove hardwood, largely Liriodendron, oak in some areas, a small admixture of pine, especially with oaks.

At first overlook north of Black Rock Gap, looking east, in valley is what appears to be a mixture of pine and Nyssa.

Bet. m.p. 90 and 91, on east side, below are good mixed pine and oak forests.

Just north of Rip Rap Overlook is an area of Quercus ilicifolia mixed with pine and small hardwood. Not very striking. Better developed patch of Q. ilicifolia just below overlook. (2910').

At Lawrence Run Overlook is an excellent example of Quercus ilicifolia scrub with abundant emergent pines.

From Calf Mt. Overlook can be seen numerous small hills emerging abruptly from floor of Shenandoah Valley. Erosion remnants?

Coloring at higher altitudes just past its prime, excellent at middle alts. not quite at best on lower slopes.

collected & spec

Oct. 17 - Rip Rap Overlook, Skyline Drive, Augusta Co.
on roadside, edge of ~~scrub~~ ~~oaks~~ Quercus ilicifolia scrub.

2 39633 Aster pilosus var. platyphyllus — 2910' — 890m — (7-9) Blake? — dump of
rare — branches from a mowed plant, old stem stiff, rays white, disk turning reddish, diffusely branched, main stem erect, branches ascending.

2 34 Amaranthus albus L.
rare — culms spreading to ascending, in small tufts. shrub 1.5 m. tall, leaves glaucous beneath.

2 35 Cyperus filicinus Vahl
common

2 36 Salix
rare in edge of scrub

Oct. 13 - Blue Ridge Parkway at Mile Post 9, south of Humpback Rock, Augusta Co.
weedy road embankment

3 37 Hedyotis purpurea var.
with nos. 39638 and 39639 in — representing a very polymorphic population - in small dense tufts.

3 38 Hedyotis purpurea var.
with nos. 39637 and 39639 in — same

3 39 Hedyotis purpurea var.
with nos 39637 and 39638 in — same

Oct. 18 5 mi. n.n.e. Lexington, 3 mi. n. of Rockbridge Baths, on ridge east of Maury River, Rockbridge Co.
in steep ravine cut in limestone

4 40 Thuja occidentalis L.
common in small area in this woods — crooked tree 25 cm. diam., with branches almost to base.

4 41 Oxypolis rigidior (L.)C.+R.
common in shallow soil in this woods — fruit smooth, not ribbed dorsally when fresh.

1958 Virginia

Oct. 17 - Blue Ridge Parkway → S
In first mile ericaceous
understory to be seen locally.
Shenandoah Valley View
(2359'). Magnificent
hardwood forest here
and on hills below,
very mixed in composition.
coloring now at its height -
Liriodendron and canoe yellow,
Quercus primus greenish brown.
Cornus red, Quercus rubra
red or still green, Robinia
green turning yellow, Fraxinus
purplish yellow, etc. This
extends in very good
development at least to
Humpback Rocks. No
ericaceous understory
at all here.
About m.p. 7 in a valley
To the west is a striking area
of solid pine, probably an
old field. Below this is a
high dam, evidently not
ordinarily filled with water -
probably flood control only.
At m.p. 9 photos in hardwood
forest. Just south of here a patch
of Rhododendron understory,
but this is generally lacking
in this area. Rocks in this
area are mostly greenstone.
Excellent Polypodium, etc.

20-Minute Cliffs Overlook -
steep slopes have mainly
chestnut-oak forest, with
scattering of other oaks,
and pines, in places with
understory of Quercus
ilicifolia, Vaccinium pungens
on rocks around overlook.
In valley below cove forest
with Liriodendron, Pinus
strobus, Fraxinus, Betula, Acer, Cornus etc.
Cultivated and abandoned
fields in valley and on hills
opposite. Colors about peaked.
Rocks covered by Umbilicaria
and other lichens.
~~From here south~~ ~~South of here~~ the rock changes
to shale. Ericaceous understory
generally present. Forest
has low stature. Trees
have more nearly lost
their leaves. Alt. 3000'+
From m.p. 25 to 30 many farms
and pastures, country generally
disturbed. M.p. 30-35, Tsuga
becomes common, some Pinus elsbra
and other pines in hardwood
forest. Ericaceous understory
absent or poorly developed. M.p.
35-42 low altitude, 1'-2400'.
Pinus strobus mixed in
hardwood, no Ericaceae to
amount to anything. South
of here for several miles

good hardwood forest, then 1 mile a two or crests with low forest and scrub. some grenow ilicifolius and pine.

Canyon from m.p. 47 down to Buena Vista ~~the~~ has steep walls, largely covered by pine. A low understory of Vaccinium, etc. prominent.

North on Rt. 39 from Lexington - Limestone ridge E. of Maury River with thin oak forest, much juniperus, some pinus virginiana and a stand of Thuja occidentalis in a steep ravine - S. of Rockbridge Baths, N. of Lexington.

West Virginia - road from Marlinton to Elkins, near Slaty Fork hardwood forest, acer ~~predominant~~ locally, some Liriodendron, much oak + birch. (2 photos E. of Slaty Fork, 2 E., ~~one~~ half with meter set at 110, other half one stop less light)

Tygart Valley - photo of acer nigrum (?), also mixed forest.

The forest throughout this part of West Virginia is well colored, though many

leaves have fallen, hence very prominent, especially the oaks and birches.

Photo of hardwood forest in pass at Elkins + Alpena. Liriodendron conspicuous.

Crumbling shale cliffs - Mouth of Seneca - Geranium robertianum, Dryopteris marginata, Asplenium trichomanes, Hedysarum

Seneca Rocks - spectacular backbone of hard tilted rocks, continuation of ridge seen farther north. Still farther north along North Fork two walls of this same rock can be seen parallel in the hills (photos).

Photo of Quercus alba (purple-maroon) against a hillside of oak-hickory forest, juniper in front. (North Fork)

Northward, where road cuts through the hard dikes is a talus where Pellaea, Woodsia?, Draba, etc. grow both in talus and crevices of hard fossiliferous limestone & limy sandstone. Is this Seneca Formation?

(4 mi. E. Smoke Hole Caverns)

Smoke Hole Road - from north goes over high mountain covered with deciduous forest in full color. Acer nigrum, Fuscus spp. etc. Ravines are dry & almost no. Whole aspect one of dryness.

Smoke Hole recreation area has flat bottom land with grass, hemlocks, pine, Platanus, etc. Steep walls with mixed hardwood forest with scattered pines on east wall, some hemlock. On west wall almost no conifers. Fairly large stream.

Rich ground flora in hemlock grove on east wall - Adiantum, Polystichum, Dryopteris, Adiantum, Aster, Solidago, Carex etc. but no Maianthemum seen. Small patch of Asplenium rhizophyllum on rock.

Labels typed

Oct. 19 - Mouth of Seneca, Seneca Creek, on crumbling shale cliff

396 42 Dryopteris marginalis common

1 43 Hedyotis purpurea var. tenuifolia rare

2 44 Asplenium trichomanes common

Oct. 19 - North Fork River, 1.4 mi. s. of Smoke Hole Cavern, in crevices and talus at foot of limestone cliff

2 45 Muhlenbergia common

1 46 Woodsia obtusa rare

1 47 Draba common

1 48 Pellaea rare glaucous

Oct. 19 - Smoky Hole Recreation Area, Pendleton Co.

1 49 Asplenium rhizophyllum L. small colony on rocks in hemlock grove on steep west slope fronds procumbent, rooting at tips

1958 District of Columbia

Oct. 11 - Washington, 18th + New Hampshire
ave. weedy place along sidewalk

49650 Panicum dichotomiflorum Michx.

culms spreading, depressed.

192

194